'It's Important to Know In Time'
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Air Conditioning & REFRIGERATION NEWS

Production Tools for Victory
AN INTERNATIONAL INSTITUTION ★ SUBSCRIBERS ALL OVER THE WORLD ★
Technical Governmental

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Inside Dope

By George F. Taubeneck

Reconversion Won't Be a Picnic

Firms now pressing to get back into civilian production perhaps should examine the possibilities with more than customary care before getting too far out on the end of the limb.

Early reconversion may not be so profitable or so desirable as might seem apparent at initial glance.

To begin with, quantities of whatever civilian supplies permitted will be relatively small. Again, they will probably be divided among a number of clamorous manufacturers. Result may well be unprofitably short production runs.

Keep in mind, too, the OPA and Mr. Vinson. If your costs have risen —and whose haven't?—you may be unable to pry a decent price schedule out of the official sitters-on-the-lid. They'll just grin grimly (or fiendishly, as it may seem to you at the time), and tell you to squeeze the difference out of your profit margin and out of the hides of your distributors. In general, pre-war prices will be the yardstick.

Policy Guesses

Policy on reconversion problems has progressed sufficiently far for you to make fairly accurate guesses on what will and won't be allowed as we make the transfer from war products to goods for stay-at-home John and Jane Doe.

In the first place, that new product you've been so carefully rearing in the back laboratory may have to be kept under wraps for a long time. Preference will be given in every case to established products and established producers. That means 1942 models of 'most everything.

If you weren't in the business before the war, you may have difficulty in breaking in before the old-timers of the industry have had their opportunity to recapture their former places in the sun. True, this policy could be called "un-American," but it's also fair—and to be fair is to be American.

However, all former members of an industry may not be able—because of urgent war production commitments—to get back into the game at the same time. In such cases, it is possible that newcomers may get their chance, particularly if they are willing to manufacture goods for resale by the tied-up former manufacturer of such goods.

Plants in areas of labor abundance will probably get first call on materials released for civilian production. Plants in labor shortage areas will have very little opportunity to get back into their old line of business.

Government controls will continue at least until both Japan and Germany have thrown in the towel, and possibly for some time afterward, depending on whether or not there is a Fourth Term.

WPB industry committees are slated to have a great deal to say about reconversion policies. Keep in close touch with yours.

(Concluded on Page 10, Column 1)

Institute Meeting April 3-5 Touches Dealer Problems

NEW YORK CITY—Problems of postwar merchandising of appliances and other electrical equipment will have a prominent place on the program of the Annual Commercial Meetings of the Edison Electric Institute April 3-5 at the Stevens hotel in Chicago.

These problems will be taken up at the Sectional Conference on Industry Coordination for Postwar Selling, which comes on Monday, April 3, and at the general sessions on Tuesday and Wednesday.

All utility men are invited to the meeting irrespective of company membership in the Institute, it was emphasized by C. E. Greenwood, EEI commercial director.

Following is the program:

Monday, April 3—2 p.m.

Subject Program

"Opportunities for Industry Coordination in Postwar Promotions."
"Retailers' Plans for Expansion of Electrical Sales."
(a) The Furniture Trade.
(b) Rubber Manufacturer Joins the Electrical Family.
"Building Stronger Dealer Outlets."
(a) Manufacturers' Programs.
(b) Utility Programs.
Open Discussion.
(Speakers on above subjects from utilities manufacturers and trades.)

GENERAL SESSIONS

Tuesday Morning, April 4

Opening of Conference, Chairman Edwin Vennard.
"The Future of Industrial Power," G. B. Stainback, Westinghouse Electric & Mfg. Co.
"A Rural Program for the Utility

(Concluded on Page 2, Column 4)

Plane Plants Ponder Appliance Plans

LOS ANGELES—Manufacture of refrigerators, automobiles and other consumer items probably will be considered by major West Coast aircraft companies after the war, but planes will continue to be the main products even then, newspaper reporters were told last week by P. G. Johnson, president of Boeing Aircraft Corp., and J. H. Kindelberger, president of North American Aviation, Inc.

'Get Parts Now For the Summer Season'--WPB

Official Statement Gives Procedure For All Types of Supplies

WASHINGTON, D. C.—Refrigeration service shops should prepare now for the heavy demand for their services that is expected to develop this summer, the War Production Board declared in a special release March 22.

"To render the best possible service during their peak demand period, it is necessary that these shops have sufficient materials and parts on hand or available in a supplier's warehouse," WPB said.

The procedures that should be followed by these repair shops to obtain the necessary parts and material have been pointed out by the Electrical and Mechanical Repair Shops Section of the Office of Civilian Requirements. They are as follows:

PARTS AND MATERIALS

Orders should be placed now for future delivery of parts and materials which repair shop operators know will be required in their service business this summer.

A procedure has been established for obtaining parts requiring ratings and materials requiring an allotment symbol, WPB explained. Controlled Material Plans Regulation 9-A provides a method for repair shops to obtain parts and materials for domestic refrigeration repair services. Order P-126 makes provisions for repair shops to obtain necessary parts and materials for commercial and industrial refrigeration repair services.

These orders should be supported by the proper allotment symbol or preference rating, and if one supplier is unable to fill the order, other sources of supply should be investigated.

Parts and materials for domestic refrigeration repairs have been difficult to obtain in the past, but recent developments have begun to relieve this situation, WPB said. Many repair shops which formerly have placed orders and were unsuccessful in having their orders filled have assumed that those particular parts or materials simply are not available. This is the wrong assumption, WPB said. Orders should be placed

(Concluded on Page 26, Column 2)

Canadian Group Shows Benefits of Work With Gov't

TORONTO, Ont., Canada — The Fifth Annual Refrigeration Conference sponsored by the Canadian R.S.E.S. drew a record crowd of more than 250 registrants to the King Edward hotel here March 20 and 21, and the sessions revealed that the Canadian industry is alert to the possibilities of cooperative effort in dealing with wartime restrictions and problems.

The meeting marked the first official anniversary of the Interprovincial Association of R.S.E.S., an organization of all the Canadian chapters. The Interprovincial Association was granted a charter by the International R.S.E.S. and John K. Bush of Buffalo, a director of the International Society, made the presentation.

It was the report by E. G. McCracken of Wagner Electric, secretary of the Interprovincial Association, that revealed how cooperative activity had made it possible to tackle problems and accomplish things that could not otherwise have been done.

A committee on deferment, Mr. McCracken revealed, had discussed the status of the refrigeration servicemen with the Selective Service Department of the government with the result that an official bulletin went out to the local mobilization boards requesting that special consideration be given to servicemen. While this does not mean automatic deferment for men in such work, said Mr. McCracken, it does guarantee that the case of each worker will be given full consideration with deferment where it meets with the public interest.

(Concluded on Page 4, Column 4)

Maj. Gunther Heads Camp Lee School

CAMP LEE, Va.—Major Raymond C. Gunther of Paterson, N. J., has been appointed officer in charge of the Refrigeration School in the Quartermaster Replacement Training Center. Experienced in civilian life as a special engineering and refrigeration consultant and advisor on lubrication system design to industrial machinery manufacturers, he has had a wide Army background since his commissioning in 1938.

Following his graduation from Pratt Institute in 1928, Major Gunther served with the Carrier Engineering Corp. as air conditioning and refrigeration engineer for three years, traveling extensively throughout the southern United States, but with headquarters at Philadelphia, Pa., and Newark, N. J. He participated as an engineer on the installation of the air conditioning system in the Capitol at Washington, D. C.

(Concluded on Page 4, Column 1)

Price Controls Urged For Year After War

WASHINGTON, D. C.—Price control should remain in effect until one year after the war ends, Sen. Bankhead of Alabama last week told Senate banking committee hearing on a bill to extend the law to June 30, 1945.

Senator Barkley of Kentucky declared that large excess purchasing power will exist after the war and prices will rise disastrously if controls are taken off immediately.

OPA plans are to relieve price regulation gradually, starting with items in large supply, the committee was told by Deputy Administrator Brownlee.

Repairmen Up To 26 Hit by Draft Changes

Procedure for Deferring Older Servicemen Remains Unchanged

DETROIT—Despite the government's announced intention of speeding up the drafting of men for the armed forces, there has been no drastic change in the procedure for deferring refrigeration servicemen, except for the new regulation prohibiting occupational deferments for all men under 26.

The new system of giving preinduction physical examinations also has little effect on the deferment procedure beyond the possibility that it may cause confusion in the mind of the registrant as to how he should obtain a deferment after he has been classified as 1-A and given a physical.

It should be carefully noted that a registrant has only 10 days in which to ask for a personal hearing by the local draft board or to appeal the case, and that this 10-day period starts from the date of classification as 1-A. The date of the physical examination has no bearing on the dates of the appeal period, it must be remembered.

When a refrigeration repairman is classified as 1-A, he should immediately call attention of his local board to Local Board Memorandum 115-B, which includes refrigeration servicemen among 149 "critical" workers for whom deferment is recommended by national headquarters of Selective Service.

As was suggested in the Feb. 21 issue of AIR CONDITIONING & REFRIGERATION NEWS, the registrant should send a letter by registered mail to his local board requesting that the board process his case according to the procedure outlined in Memorandum 115-B. This must be done immediately.

The employer should also send in such a letter, likewise by registered mail, and should immediately file Form 42-A asking for occupational deferment.

Form 42-A should include information and data about the shop's activities and the general community situation on electric refrigeration re-

(Concluded on Page 26, Column 1)

Admiral Names Lee Baker To Direct Appliances

CHICAGO—Lee H. D. Baker, formerly sales manager for Gale Products, has been appointed vice president in charge of major appliances for Admiral Corp., which recently acquired the appliance division of Stewart-Warner Corp., according to Ross D. Siragusa, president.

Other new appointees include four regional managers announced by J. H. Clippinger, vice president in charge of sales. Harry Lever has been named southeast manager; John F. Gilbarte, southwest manager; Sidney H. Regovin, midwest manager; and Lou Willis, west coast manager.

Messrs. Lever and Gilbarte, who are now making their headquarters at Admiral's new sales, service, and display offices at 444 Lake Shore Drive, Chicago, will be stationed eventually at Atlanta, Ga. and Kansas City, Mo., respectively. Mr. Willis' headquarters are in Los Angeles, and Mr. Regovin will work out of the main office in Chicago.

Prior to his connection with Gale, Mr. Baker was in charge of manufacturer's equipment sales for Universal Cooler Corp., and from 1934 to 1937 he served as vice president of Copeland Refrigeration Corp.

G-E Takes Over Service In Newark District

WEST ORANGE, N. J.—L. H. Taylor, manager of Product Service for the Appliance and Merchandise Department of General Electric Co., has announced the establishment of a factory-operated Newark Appliance Service Center at 85 Main St., West Orange.

The service center will take over the service activities on G-E refrigerators, ranges, water heaters, washers, ironers, Disposalls, electric sinks, kitchen cabinets and commercial refrigeration equipment formerly handled by the Philip H. Harrison Co.

The Harrison company will continue as distributors of commercial refrigeration equipment.

The Newark Service Center, the seventeenth factory-operated appliance parts and repair organization under Mr. Taylor's supervision, will be managed by John H. Stubbs who, for the past six years, has been product manager for the Harrison company.

Cleveland League Has Meeting For Dealers On Postwar Planning

CLEVELAND—This city's electrical appliance dealers, both large and small, have been invited by the Electrical League of Cleveland to attend two meetings, March 22 and April 26, to discuss postwar planning and learn what manufacturers have in store for them.

Speakers for the initial program, were to include C. H. Smith, general sales manager, Edison General Electric Appliance, Inc.; H. H. Kennedy, Cleveland district manager, Frigidaire Division, and Grant Stone, advertising manager of the "Cleveland Press" and chairman of the distribution action group of the Cleveland Committee for Economic Development.

Authorities will discuss at the second meeting the postwar plans dealers might make in marketing, store layout, salesmanship, selection

(Concluded on Page 4, Column 3)

Movie Charmer Spurs Westinghouse Workers To Buy Bonds To Build a Bomber

Maria Montez, motion picture actress, addresses workers at a Westinghouse appliance department plant (at Mansfield, Ohio) war bond rally as Lee Bowman (left), another movie star, awaits his turn. Shown with them is J. Gilbert Baird, Westinghouse visual education director, preparing to present Miss Montez with a replica of an armor-piercing shot which Westinghouse produces by the thousands. The film celebrities helped Westinghouse workers launch a drive to raise $330,000 in war bonds by buy a Liberator bomber. Within 24 hours, employes purchased $50,000 in bonds.

Norge Appliances To Be Made In Canada

DETROIT — Norge Division of Borg-Warner Corp. has completed arrangements for the manufacture of a complete line of Norge products in Canada after the war, reports Howard E. Blood, president.

Norge has contracted with Addison Industries, Ltd., of Toronto, to produce its refrigerators, washers, ranges, heating units, and other appliances in Canadian plants of the Toronto company.

Distribution of the Norge line in Canada is to be handled by A. Cross & Co., Ltd., Toronto, which has branches throughout Canada.

Hal McPherson Named To A.S.A. Committee

NEW YORK CITY—Hal McPherson of Henry Valve Co. has been appointed a member of the American Standards Association Committee on Pipe Flanges and Fittings.

The work of the committee covers the dimensional standardization (exclusive of screw threads) and designation of materials for pipe flanges and flanged and screwed fittings, for pipes carrying steam, gas, air, ammonia, water, etc. It also includes the standardization of face to face dimensions of ferrous gate, globe, angle, and check valves having flanged connecting ends and WSP ratings of 125 and 250 lbs.

E.E.I. Meeting To Discuss Retailing

(Concluded from Page 1, Column 2)

Industry," Grover C. Neff, Wisconsin Power & Light Co.

Tuesday Afternoon, April 4

"Some Electrical Manufacturer Production Problems—War and Postwar," H. L. Andrews, vice president, General Electric Co.

"Trends in Quick Frozen Foods Affecting the Electric Utility," Clarence Birdseye, Birdseye Frosted Food Co.

"What's Ahead in Lighting," R. C. McFadden, Southern California Edison Co., Ltd.

Tenth Anniversary Pageant—"Better Light—Better Sight."

Wednesday Morning, April 5

"Postwar View of Automatic Indoor Climate," P. B. Zimmerman, Indoor Climate Institute.

"Utility-Retailer Coordination in Sales and Service," Joseph T. Meek, Illinois Federation Retail Assns.

"Electrical Living in Homes of Tomorrow," M. E. Skinner, Buffalo Niagara and Eastern Power Corp.

"Simplified Electrical Terms," Edwin Vennard, Middle West Service Co.

LUNCHEON SESSION—12:45 P.M.

"What We Have to Sell" (Postwar Surplus Power), C. W. Kellogg, president, Edison Electric Institute.

"The Long Lane Is Turning," James W. Irwin, executive staff, National Dairy Products Corp.

Worthington '43 Sales 47% Over Previous Year

NEW YORK CITY—Operations of Worthington Pump and Machinery Corp. for 1943, which produced billings of $152,631,293, were the largest in the 103-year history of the corporation, and represented an increase of 47% over the sales for 1942, H. C. Beaver, president, announced last week.

Net income before taxes for 1943 was $25,271,490, an increase of 67% over the 1942 figure of $15,094,390. Net income after provisions of $19,703,000 for Federal income and excess profit taxes, of $2,555,000 for contingencies, and of $788,000 for postwar rehabilitation, amounted to $2,942,490, an increase of 6.7% over the 1942 net income of $2,758,890.

In accordance with the provisions of its 1942 renegotiation agreement, the corporation made a net refund to the government of $551,426, on which final payment was made prior to Dec. 31, 1943.

Last year the corporation paid off its bank loans, cleared up accumulations on its 7% and 6% preferred stocks, and resumed dividends on the common, declaring $2 a share.

John Hurley Supervises Sears Washer Buying

CHICAGO — John Hurley, former vice president of the Nineteen Hundred Corp., domestic laundry equipment manufacturers, has been made supervisor of buying of washing machines and ironers for Sears, Roebuck & Co.

Mr. Hurley had been in charge of sales for the Nineteen Hundred Corp. He has held a number of positions with government agencies during the war, having been Chief of the Consumer Durable Goods Branch of WPB, vice chairman of the Standard Products Committee, and Director of the Wholesale and Retail Trades Division. He resigned last year to resume his duties with the Nineteen Hundred Corp.

Lewis Smith Appointed To Savage Arms Post

LEWIS R. SMITH

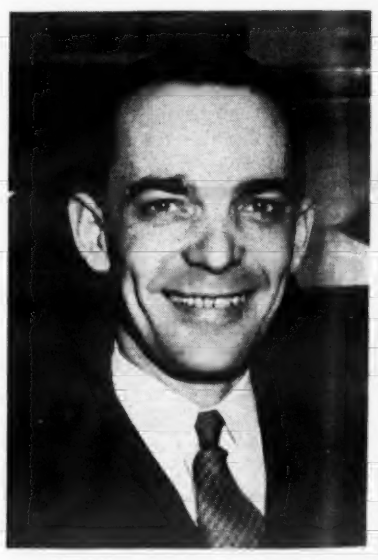
* * *

UTICA, N. Y.—Lewis R. Smith has been appointed chief engineer of Savage Arms Corp.'s Refrigeration Division, a position he formerly held at Acme Industries, Inc., Jackson, Mich.

Mr. Smith joined Westinghouse Electric & Mfg. Co. in 1926 following graduation as an electrical engineer from South Dakota State College and post-graduate work in physics and mathematics at the University of Pittsburgh. His work with Westinghouse included development and testing of refrigeration and air conditioning equipment. In 1938 he went to Acme as chief engineer.

Mr. Smith holds several patents on refrigeration control and design, and his work at Savage Arms will include study of war-born technical improvements, new materials, production methods, engineering designs.

Bennett Field Engineer For Universal Cooler



JOHN H. BENNETT

* * *

MARION, Ohio—John H. Bennett, formerly with Kelvinator Export Division, has joined Universal Cooler Corp., here, as field engineer, announces Sales Manager A. E. Cadwell.

Mr. Bennett, who served Kelvinator from 1930 to 1941 as factory sales and service engineer in Africa and India, now is supervising field tests on Universal Cooler units built for the armed forces. After the war, he will assume special duties in connection with the engineering of Universal Cooler refrigerating units to meet the specialized requirements of fixture manufacturers.

Veteran Wholesaler Takes Apart FTC Report Praising 'Direct' Distribution

Editor's Note: Harry Alter has been a wholesaler of appliances and appliance parts since sometime before 1920. The news story on page 1 of the March 13 issue of the NEWS headlined "FTC Report Calls Direct to Dealer More Efficient" aroused him into writing the following reply to the FTC study.

By Harry Alter, President, The Harry Alter Co.

The implications of the Federal Trade Commission report to Congress about distributive costs of refrigerators in the March 13 issue of the NEWS, overlooks entirely the direct relationship of cost and volume.

Reference is made to a manufacturer who began direct sales to dealers in 1939 at reduced prices. I think I know who that manufacturer is. But nothing is said about how this manufacturer projected a vast increase in sales over previous years based on his cutting of prices. No mention is made about when other manufacturers also reduced their prices the direct-to-dealer manufacturer failed to show further proportionate sales gains.

My opinion is that the case in point does not prove any increase in efficiency in distribution between the factory-to-dealer method as against factory - to - wholesaler - to - dealer. Rather it proves the axiom that the larger the volume of business the lower is the cost of doing business. It also proves that a price advantage is but temporary.

Suppose in 1939 all refrigerator manufacturers had pursued a sales policy of direct to dealer. Could this manufacturer have made as sensational sales gains as he did? I don't think so. Also under such conditions with keen competition for dealer outlets by all manufacturers (visualize all of them selling direct through their own branches and their own sales organizations) their sales costs would sky-rocket and eventually the public would be paying even more for their refrigerators.

Picture the condition mentioned above where every manufacturer was selling direct to dealers under fearful competition and intensive, costly sales drives for dealer outlets. Would it be too fanciful to say that some smart sales manager, under such conditions, would step out, line up topnotch wholesale distributors around the country, possessing strong local dealer followings and make the same sensational gains that FTC has pointed to in their report? And then all the other manufacturers would return to wholesalers to catch up.

Furthermore, I think the FTC report implies that bigness per se is good and even that regimentation in distribution is desirable.

A smaller manufacturer for instance could not conceivably finance, and organize for a successful direct-to-dealer sales program. He just must have wholesalers to help him distribute his products to the retail dealer.

Is the FTC report inferring that only the big shall survive? Are they suggesting that if you can't afford chromium trimmed factory-owned distributing branches and high priced local sales organizations you better quit?

Pursuing the thing a little further I think if FTC merged all refrigerator manufacturers into one company and all dealers had to take the prices and discounts dished out by this monopoly, distributive costs would be mighty low. But without the stimulus of competition I think the product would eventually be so poor that even at bargin prices no one would want it.

In the final analysis what it really comes down to is just this—can a factory branch do a better job, sell more goods at lower costs than an independent distributor?

I say definitely "no." I have examined too many factory branch operating statements, seen too much lost motion to believe otherwise.

The case cited by FTC is an isolated one and even so it is not a fair one, because the manufacturer in question was going down hill, threw everything he had in this one great effort by slashing prices in anticipation of a sensational gain in sales. And last but not least he made this move during an exceedingly propitious period.

It is to be doubted whether it would have worked in 1937. I think he could have made the same accomplishments during 1939 through wholesalers, because his line of refrigerators had been redesigned, restyled, and jazzed with a lot of new sales appeal. I don't think it fair to attribute all of his success to the mere fact that he sold direct to dealers.

Further criticism of the FTC report is that their cost-of-distribution figures are for "household electrical appliances." We all know that some appliances cost more to sell than others so why lump them all together? How authoritative can their figures be?

Many appliances are sold at low prices for the mass market stripped of gadgets and trimmings, and their sales and distributing cost is lower than that of the "deluxe" models. Has FTC given that phase of the business special consideration? Should the industry make and sell only stripped models? Should the man who wants chromium trim and glamor be deprived of his pride of possession?

No, FTC has not proved a thing. What the future holds no one knows but my guess is that wholesalers will stay right in there pitching because American business needs experienced men. And some day the function of wholesaling will be recognized as an essential, vital and an indispensable one, even maybe respectable.

NBC Head Bares Plans For Development of Television Networks

NEW YORK CITY — National Broadcasting Co. has extensive plans for the nationwide development of television, it was revealed last week by Niles Trammell, president of the company.

In a letter to NBC affiliated stations Mr. Trammell said that "the addition of sight to radio is as revolutionary as was the addition of sound to sight on the motion picture screen."

Mr. Trammell warned against hope that a nationwide network would spring up overnight, and indicated that first steps might have to wait until after the war. He said there would probably be three networks—eastern, midwest, and Pacific Coast—which would later be brought into a complete single nationwide network.

No Increases in Prices Likely in Early Stages Of Reconversion

WASHINGTON, D. C.—There will be no increases in the prices of consumer goods in the early stages of reconversion, OPA Director Chester Bowles indicated last week.

In the early stages of limited production of civilian items prices will be kept firm to resist inflationary pressures, Mr. Bowles declared. As facilities for civilian product increase, these inflationary tendencies will subside and it will then be OPA's policy to do everything possible to encourage full production and full employment.

OPA officials deny that they contemplate a "2%" limit on prices of items for civilian use produced while the war is still on, but the policy outlined by Mr. Bowles could mean that a manufacturer might produce consumer goods at a loss if he were still working on war contracts that enabled him to show a profit for his overall operations.

In a recent talk before the American Retail Federation Administrator Bowles declared that the "price control of durable goods will probably stay in effect longer than our controls on other parts of the economy, even longer than food price controls."

Dr. Ehman is Assistant Director of Research For Ansul Chemical

MARINETTE, Wis.—Dr. Philip J. Ehman, a research chemist with Ansul Chemical Co. for the past eight years, has been named assistant research director, according to H. V. Higley, the firm's president. Dr. Walter O. Walker is Director of Research and Development at Ansul.

Ehman, born and reared in Montana, received his Bachelor of Science degree in 1932 from Montana State College and three years later earned his Ph.D. at Chicago U.

Major Gunther Heads Camp Lee School

(Concluded from Page 1, Column 4)

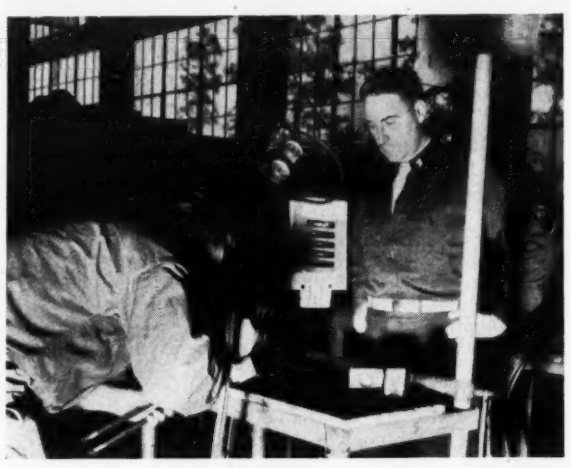
Later he was connected with the Socony-Vacuum Oil Co. as a lubrication engineer and specialist on refrigeration, railway and machine shop lubrication. For two years he acted as lubrication advisor on all subways and elevated lines in metropolitan New York City, as well as the Connecticut company's transportation equipment in that state.

During 1933 and 1934 he covered the New England states, New York and Michigan as automotive engineer testing automotive equipment for large utility companies.

He acted as lubrication advisor to industrial organizations in Philadelphia during the next two years, specializing in refrigeration plants and machine shops.

Later, Major Gunther was special engineering consultant for the Socony-Vacuum Oil Co., with headquarters in Chicago, where much time was spent with manufacturers of refrigeration equipment.

Since receiving his commission in 1938 he has had wide Army experience. He has been instructor in the motor school at the Holabird Quartermaster Motor Base at Baltimore, and in many other directorial capacities.



Major Raymond C. Gunther, new head of the QMRTC Refrigeration School at Camp Lee, Va., watches a trainee in the school weld a joint on an evaporator coil.

* * *

Cleveland Dealers Meet To Map Postwar Plans

(Concluded from Page 1, Column 3)

of trading areas and other problems pertinent to appliance stores.

There has been a remarkable small casualty rate among electrical appliance dealers here, despite wartime curtailment of merchandise, according to J. E. North, president of the Electrical League, who estimates that out of 204 prewar dealers, 181 have managed to stay in business. He explained that the small merchants have hung on by increasing their repair business and by finding non-critical goods to sell.

The two postwar planning conferences, it was explained, are designed to answer the postwar questions in dealers' minds, to stimulate them to plan now and to give them information on new products.

Canadians Benefit From Group Action

(Concluded from Page 1, Column 4)

In the matter of obtaining gasoline for the cars and trucks of servicemen, the group conferred with the Assistant Oil Controller and at his suggestion established a committee to handle and make recommendations on all requests for an extra gasoline allowance.

This the committee has done, reported Mr. McCracken, with the result that not one of its recommendations for extra allotments has been refused. Another committee has worked on the problem of securing more consideration for servicemen on the matter of tires.

A Code and Licensing Committee has been active also, but its proposals must await the war's end. It is reported that an effort will be made to place refrigeration servicemen under the Apprentice Act.

A number of technical papers of exceptional quality were presented at the meeting (some of which will be published in a subsequent issue). There were also some talks of general interest to the refrigeration field.

GRAFF LOOKS TO FUTURE

In speaking on "The Future for Refrigeration Service Engineers" G. E. Graff, Ranco, Inc., urged that the cooperation between the various elements of the industry effected in wartime be carried over into peacetimes. It is important, he said, that the serviceman stick to his line of work of repairing and maintaining equipment, and support the salesmen in his work of selling equipment.

Present times are offering service firms their greatest opportunity of putting their operations on a businesslike basis, said Mr. Graff.

"You'll never get a better chance to put your business on a cash basis and I urge you to do it," he said.

Mr. Graff predicted that many new men will come into service work from the Army, because of their training for it in the Army. These men will be highly skilled, and they will also bring qualities of leadership to the service field, he declared.

With reference to reconversion Mr. Graff declared that his hunch was that a number of small plants might be allowed to make civilian goods first, for the reason that they have completed about all they can do for the war effort, and they must be allowed to produce in order to survive. He also believes that much of the first equipment produced may go to battle-torn or conquered areas, and thus perhaps necessitate a continuance on the control of distribution at home.

KENNEDY PRAISES EFFORTS

W. C. Kennedy of Frigidaire Products of Canada, Ltd., representing the Canadian Refrigeration Manufacturers' Assn., congratulated the service engineers for the job they have done in wartime, in setting up installations for the air forces training program, in equipping ships during the "Bacon for Britain" campaign, and in keeping existing equipment operating efficiently.

"Studies have revealed that food loss through spoilage in this war are only 7% of the spoilage rate of foods in World War I," said Mr. Kennedy.

The postwar picture for servicemen in Canada is not too easy to predict, said Mr. Kennedy. He believes that immediately following the war there will be no great product changes, but later on there will be much that will be new for the serviceman to learn. Mr. Kennedy believes that the rate of growth of the household refrigeration industry in Canada will be faster in Canada following the war than in the United States.

New officers of the Interprovincial Association elected for the coming year include: President, William Marshall, Toronto; first vice president, W. Sneath, Toronto; second vice president, C. Pigeon, Montreal; secretary, E. G. McCracken, Toronto; treasurer, G. Condie, Toronto; sergeant-at-arms, A. Pike, New Brunswick.

Representatives from the various chapters are as follows:

Calgary chapter: W. F. Dowling, A. Neilson.

Nova Scotia chapter: C. T. Tredwell, L. W. Munger.

Forest City chapter: W. Bevic, C. Cunningham.

Mount Royal chapter: B. Lacerte, M. M. Turner.

Maple Leaf chapter: R. O'Connell, J. McKee.

New Brunswick chapter: A. Laflame, S. H. Perry.

Canadian Capital chapter: H. Darraugh, W. Podd.

Winnipeg chapter: T. L. Arnett, F. Chance.

Baker Joins Admiral

LEE J. BAKER

Recently appointed vice president in charge of major appliances for Admiral Corp., he formerly was sales manager for Gale Products, and has been connected with Universal Cooler Corp. and Copeland Refrigeration Corp.

Twice in a lifetime

He was just a little fellow a dozen years ago.

Too little to know — or care — that even as he slept, General Motors men in a distant laboratory were putting the finishing touches on a special new refrigerant later given the trade-mark, *"Freon."**

Much too little to understand that the real reason for developing this new compound was the safety of just such sleeping youngsters as himself.

That it was important because it provided the last link in perfect safety for home or hospital refrigeration, ending even the remote risk of toxic harm in the unlikely event of leaks in the cooling system.

He is grown now, and off fighting for his country on a South Pacific island. He is old enough to know that one of his deadliest enemies there is the mosquito, carrier of malaria.

The interesting thing is that it is *"Freon"* that now comes to his aid. Twice in his lifetime, this one result of General Motors research is paying off in personal protection for him and his kind.

For when mixed with chemicals to kill mosquitoes, this compound makes a new and better kind of insect spray. Unlike heavier sprays that fall to the ground, it evaporates almost instantly, leaving the mosquito-killing compounds floating suspended in the air.

"Freon" was not developed as a war product. It came about because General Motors, seeking to provide more and better things for more people, never stopped trying to make better refrigerators for American households.

But because it was known and familiar, it was available when the war need appeared — just as it remains at hand for future peacetime developments.

The idea that built America — the idea that men accomplish most when they can win a just reward for doing great things — has served the country well in war.

And the same idea will keep on providing more and better things for more people in a world restored to lasting Peace.

*Trade-mark registered. "Freon" is made and sold by Kinetic Chemicals, Inc.

GENERAL MOTORS

"VICTORY IS OUR BUSINESS"

CHEVROLET • PONTIAC • OLDSMOBILE • BUICK • CADILLAC
BODY BY FISHER • FRIGIDAIRE • GMC TRUCK AND COACH

KEEP AMERICA STRONG • BUY WAR BONDS

When the Gov't Okays Reconversion, Washer Manufacturers Will Be Ready

Established Firms Will Get Materials First If Industry's Plan Is Used

CHICAGO — While representatives of the washer industry continue to besiege the War Production Board for permission to resume production, the management of the nation's washer producers is putting the finishing touches on plans for reconversion. The washer industry is all set to reconvert and needs only a "green light" from the WPB, it is reported.

870,000 WASHERS GONE

In recent appearances before the WPB, the washer industry declared that 870,000 washers wore out in 1943 and cannot be repaired or replaced. Inadequate laundry service, contends the industry, hurts the morale of the war worker and slashes the working capacity of the woman on the farm.

The plan the industry has prepared against the time when WPB says "go ahead" is based on two major points. First, raw materials will be allocated according to a specified prewar period. Second, established manufacturers will receive materials before new firms are supplied.

The washer industry also wants to be tipped off six months in advance of the intended day of reconversion; asks that formal release by WPB include all CMP priorities needed for necessary raw materials and parts; requests gradual increases in production schedules as the war nears its end; seeks to avoid "Victory" models; and asks that the individual manufacturer be allowed to chose his own models.

Another phase of the industry's own plan calls for the establishment of quotas for each manufacturer with permission for one plant to manufacture washers for another if the latter firm is too busy with war work. But if a busy plant does not wish to place orders with another firm, the plant should be allowed to let its quota of washers accumulate, believes the washer industry.

The latter provision, incidentally, differs from the plan proposed recently for the electric range industry. Under the range plan busy manufacturers could place orders with other firms, but if the busy firm did not use its quota by ordering ranges made elsewhere, the quota would revert to WPB for re-allocation among the other producing firms.

STARTED 18 MONTHS AGO

For 18 months the washer industry has been evolving its plans for reconversion and the postwar period. In October, 1942, John M. Wicht, director of the home laundering equipment division of General Electric Co., Bridgeport, Conn., and president of the Washer and Ironer Assn., called the association's executive committee into a meeting to study the industry's problems.

This and other meetings led to the formation of a postwar planning committee headed by Roy A. Bradt, vice president of Maytag Co., Newton, Iowa. Sub-committees have since examined postwar sales estimates, new materials, informative labeling, advertising and publicity, and home laundry problems.

Study of postwar sales possibilities brought out that the washer industry believes it can sell 2,500,000 units a year, compared with the record 1941 total of 1,892,435. Of the 2.5 million sales, 1.5 million will be replacement sales, it is thought; 250,000 will go into newly electrified farms; 500,000 into newly established homes; and the remaining 250,000 will meet the demands of the expanding unsaturated market.

BIGGER FOREIGN MARKET SEEN

A bigger foreign market is also a possibility, believes Mr. Wicht, who cites the interest aroused by American soldiers around the world through their use of washing machines.

While the first postwar washers will necessarily be similar to, or identical with, the last models that came off the lines (the industry has preserved its dies and machines), later postwar models will incorporate new design features and new materials, it was indicated. The pre-war trend toward automatic cycle washers will be revived.

More use will be made of aluminum and magnesium, it is thought, and it is also possible that manufacturers may turn to a type of synthetic rubber which will last longer than natural rubber.

Kelvinator & U. S. Plan to Continue 'Idea Exchange'

DETROIT — At a recent dinner meeting in Washington, attended by officials of Nash-Kelvinator Corp. and by government food authorities who have been serving as judges in the "Wartime Idea Exchange," results of the first year's operation of the Exchange were reviewed and plans laid for continuation of the project.

Organized by Nash-Kelvinator in cooperation with government food authorities, the "Wartime Idea Exchange" enlisted support of professional home economists in the discovery and circulation of effective solutions for wartime home problems.

To date more than 2,10[illegible] of America's home economists, including those from leading women's magazines, newspapers, utility companies, and women's organizations have participated in the Exchange. Two hundred and two war bonds have been awarded for suggestions which have been shared with America's 35,000,000 homemakers by means of the "Homemaker's Helper" pamphlets. To date more than a million of these have been printed and distributed to schools, colleges and homemakers. Their usefulness has been further extended by frequent excerpts reprinted in newspapers and broadcast on women's radio programs.

At the recent meeting of the Committee in Washington, plans were laid for keying future Wartime Idea Exchange projects closely to anticipated developments on the home front. For example, in view of the outlook for fewer commercially-canned vegetables in 1944, together with signs of even more Victory Gardens this year, hints to home canners will again be featured as a project.

Said C. J. Coward, director of advertising and sales promotion for Kelvinator, in reporting on the success of the program, "The results of our operations to date make it imperative that the Kelvinator Idea Exchange be continued as a useful aid to wartime living on the home front. Knowledge of better ways to make old things do new jobs is the best substitute I know for the things we must do without."

Don't Expect 'Dreams' Right After War

CHATTANOOGA, Tenn. — Don't expect dream appliances—such as transparent refrigerators, or star-spangled electric ranges right after the war, but rather 1942 models with perhaps some improvements.

So advised H. M. Kelley, appliance sales manager in General Motors' Frigidaire division, and Irving W. Clark, manager of Westinghouse's better homes department, in addresses here before a conference of TVA power distributors.

"We are trying to get people not to expect the impossible," Kelley said. "The dream models you may read about now in fanciful articles will not be ready until at least three years after reconversion to the manufacture of peacetime products."

Clark seconded the idea with a statement that it was "only sound, sensible thinking to anticipate the equipment and materials will be same or similar to '42 models."

Refrigeration Essential For Navy's LST Ships

SYRACUSE, N. Y. — Essentials only are permitted on board the U. S. Navy's famous LST ships (Landing Ship-Tanks), and among the essentials are two refrigerating machines.

One unit, a Carrier reciprocating compressor specially designed for marine use, cools the food storage box containing such perishables as fruits, dairy products, meat, and vegetables. It is about the size used by the average butcher shop.

The other machine powers the ice-maker producing 200 pounds of ice at a time to cool the ship's drinking water and the soda pop sold in the ship's store.

The Priorities Quiz

(Air Conditioning & Refrigeration News, with the aid of a man who is actually engaged in handling much priorities work, will attempt to answer questions from readers about priorities problems. The editors will not guarantee to answer all questions, nor can they guarantee that the answers will be legally perfect, but an effort will be made to provide a guide to correct procedure wherever possible.)

CMP 9a Sets Amount of Installation Material

Q. We understand that there is some regulation which limits the amount of material the refrigeration serviceman may use in installing equipment. Can you tell us what these limitations are and where the regulation can be found?

A. Direction No. 2 to CMP Regulation No. 9a establishes the limit to which you refer. This direction provides that in the installation of used refrigeration equipment a serviceman may use only up to $25 worth of material purchased under CMP Regulation 9a while in the installation of a new refrigeration system authorized under L-38, he may use up to $250 worth of material purchased under CMP Regulation 9a. This is strictly a "limiting" feature and does not increase the amount of material which a serviceman may purchase under CMP Regulation 9a. Incidentally, this also applies to the installation of cooking, plumbing, and heating equipment as well as refrigeration and air conditioning items.

Disposal of 'Finished' Surplus Materials

Q. There has been a lot said and written about disposing of excess and idle inventories but we have found nothing as yet that plainly indicates to us when it is necessary to request a preference rating from one who offers to purchase our material. What schedule is there that we can use in determining the conditions we are required to meet in disposing of these materials?

A. Priorities Regulation No. 13 is the answer to your problem. This regulation has recently been completely revised and now provides schedules which show the conditions under which sales of surplus materials must be made. Only "special sales" are regulated. A special sale is a sale of a material or a product by one who does not sell it in that form in the regular course of his business.

The regulation now covers finished products as well as industrial materials. The revised regulation sets up two schedules. Schedule "A" indicates the conditions under which industrial "raw" materials may be sold as idle and excess inventory. Those industrial "raw" materials not on Schedule "A" are not restricted in any way by the regulation as to their sale.

Schedule "B" sets up conditions under which certain listed finished products must be sold. Finished products not included in Schedule "B" can be sold only: (a) to a producer of that material; (b) to a wholesaler who regularly sells that material; (c) on a preference rating of AA-5 or higher or; (d) on specific permission of the War Production Board authorized by the WPB on Form WPB-1161.

You should have a copy of Priorities Regulation No. 13 constantly before you if you are disposing of idle and excess inventories. You should also watch for revisions of this regulation, for the WPB indicates that it will be revised quite extensively as war contracts are cancelled and re-conversion to peacetime production gains more momentum.

Priorities Regulation No. 13, of course, regulates the disposal of idle and excess inventories only insofar as "priorities" are concerned. The problems of price, terms of sale, and of recovering losses arising from cancellation of contracts do not come within the purview of the WPB and its regulations.

Bombing Crews Given Flight Training In Air Conditioned Celestial Navigation Tower

COLUMBIA, S. C.—While American bombing missions abroad are increasing in intensity and striking power, air conditioning is doing its part at home by insuring the accuracy of flight devices used in the training of American fledgling pilots.

Like the widely used Link Trainer, the Celestial Navigation Tower, a more recent and less well known training device, is entirely dependent for its proper functioning and operation on controlled temperature and humidity.

At Columbia Army Air Base, Columbia, S. C., this important job is performed by a specially designed Carrier air-conditioning system composed of three package units. This installation is the result of intensive cooperation between company engineers, Link Aviation Devices, Inc., the Special Weapons Section at Wright Field, and the Chief of Engineers Office at Washington.

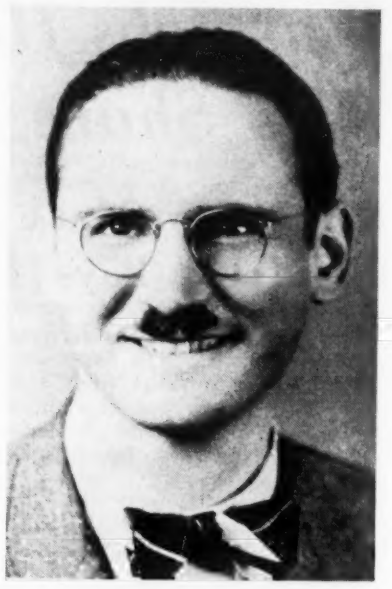
The Celestial Navigation Trainer, a plane fuselage large enough to accommodate the entire crew of a bomber, is designed to duplicate exactly flying conditions and problems encountered in the air on actual bombing missions. Bombardier, pilot, radio man and navigator go through their paces and perform all the duties of actual low-altitude and precision bombings without leaving the ground.

Suspended half-way in a tower on a framework, the "bomber" can turn, spin and do everything a real plane will do, except loop-the-loop or crash. A revolving dome overhead simulates the heavens with all the stars accurately spotted. For night flying problems, these stars show as pin points of light. The 12 navigational stars are placed so exactly that the navigator can take as accurate a reading with his sextent as if he were reading an actual star.

This "sky" is so sensitive that variations of more than 2° or 3° in temperature will give the navigator a false reading, which, of course, would result in missing the exact area of the bombing mission. This is one of the prime reasons for the need for constant temperature, with 72° inside temperature selected as the average condition to be maintained the year 'round.

Inside the bomber are all the actual controls, radio, navigational and bombing equipment found on a real bomber. Here the air conditioning system protects these delicate instruments from dust and humidity and insures their proper functioning.

Just beneath the plane an image of the ground is projected on a screen to simulate the terrain passed over. The "ground" moves at exactly the speed at which the plane is flying, while cloud formations are simulated by another projector. At the same time, every move of the crew is automatically recorded in the control room below. There an operator synchronizes the stars overhead, puts in the velocity and direction of wind and checks any mistakes made by the crew in carrying out their mission.



ROGER W. ALLEN

* * *

General Controls Opens Office in Atlanta

ATLANTA — Opening of a new branch office at 376 Nelson St., S.W., Atlanta, is announced by General Controls Co., manufacturer of pressure, temperature and flow controls.

Complete factory sales and service to customers in Atlanta are under the direction of Branch Manager Roger W. Allen.

Allen was born in Atlanta in 1904. He is a graduate electrical engineer, educated at M. I. T. and Georgia Tech, and has had broad sales and service experience in the related instruments and control industry.

War Jobs Have No Lure for Servicemen Who Share the Profits of Dayton Firm

Repairmen Make $5,000 a Year Under Plan That Pays 45% of Gross Profit

DAYTON, Ohio—Paying refrigeration service men on a basis which permits them to make from $4,000 to $5,000 per year has kept the organization of Refrigeration Service Shop, Inc. intact since Pearl Harbor, despite the "greener pastures" offered by lucrative jobs in war plants, according to L. O. Warner, owner of the Carrier dealership here.

Mr. Warner reports that his unique method of compensation, which virtually puts his men in business for themselves, together with good working conditions and close attention to maintaining a steady flow of replacement materials, has made it possible for his service men to make money and build a profitable business for the company.

Starting from a small beginning in 1933, Refrigeration Service Shop has grown to a sizable organization. Mr. Warner employs five service men, including Roman Kunkle, who has been with the company since 1934, Clifford Meixner, who joined the organization in 1937, and Robert Wilson who teamed up with the dealership in 1938. Art Ayres, another first string service man, arrived the following year. The inside office staff consists of E. H. Dismeier, business manager, and two stenographers, one of whom handles all dispatching of service calls.

Mr. Warner operates his service department on a profit sharing plan, paying his service men 45% of the gross profit on each job. Each service man employed costs out his own jobs on a special form, a copy of which is reproduced on opposite page. After complete information about the customer and his equipment is entered at the top of the sheet, the service man enters the cost of each part used in the first column, number of parts in the second column, and catalog part numbers in the third column. Center of the sheet is devoted to a description of the part; selling price is entered under column headed "Price Each," and the total is entered in the last column at the right.

The cost of parts used is subtracted from the total cost of the job, including selling price of parts and labor. After this "gross" is established the car allowance given each salesman in cash each day is also deducted from the gross. Car allowance, paid in cash, is on the basis of 25 cents per call in town, and standard parking fees where parking is necessary. The serviceman's "cut" on the business is figured as a straight 45% of the balance.

The sample sheet shown on opposite page has a total of $57.34 which is selling price of parts and labor. From this is subtracted $22.71 which represents the cost of parts used. Car allowance of $1.00 is also subtracted, leaving a total "gross" of $33.63. The service man's pay check is based on a flat 45% of this amount, which in this case is $15.13.

When a new compressor is sold, or a job completely overhauled, which may amount to a substantial sum of money, the job is figured on exactly the same basis. In other words the service man is allowed to share in the "gravy" while also handling his portion of less profitable calls. The more time a man is willing to put in, the more money he makes, but in case he wants to take a day off, he is his own boss, Mr. Warner asserts.

By taking full advantage of the L-38 order, the company has been able to maintain a steady flow of replacement parts in the face of critical shortages. Parts needing repair are collected in a series of metal baskets, one for each manufacturer or jobber which is the supplier. Baskets are labeled "Kiefaber Co." (jobber), "Frigidaire," "Carrier," or "Alco Valve," as the case may be.

When parts are returned to a supplier they carry the stub of a two piece identification tag, a sample of which is shown below. The stub enables the supplier to identify the part, and the card is filed in a card index which is used for follow-up. Some cards have been in this file for many months, indicating that it is taking the supplier that length of time to re-habilitate the part.

A form letter to manufacturers and jobbers, which refers to the part by the number shown on the identifying tag, is used as a means of getting faster action.

Refrigeration Service Shop, Inc. accepts all service calls on a strict priority basis, depending upon their war-time importance. Calls are divided, and posted on boards kept for the purpose, as follows:

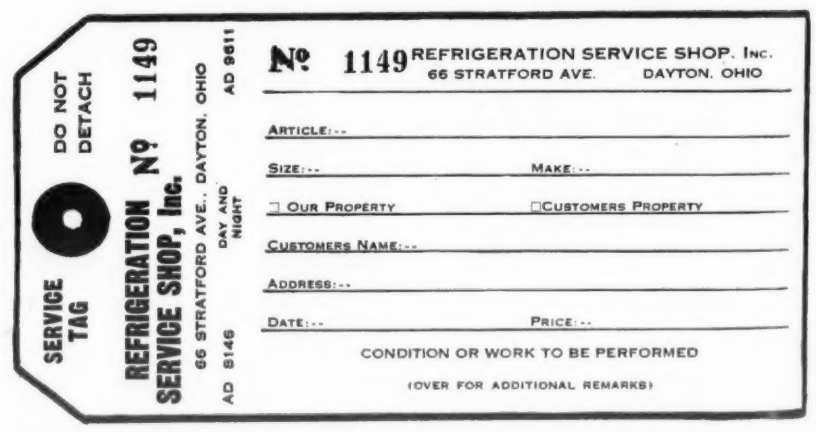
AA-1—Government bases and war plants.

(Concluded on Page 9, Column 1)

They Direct Profit-Sharing Plan

One important angle in the profit-sharing plan for servicemen used by L. O. Warner (right), owner of a service shop in Dayton, Ohio, is the maintenance of an adequate stock of repair parts. Much of this task is handled by E. H. Dismeier (left), business manager of the firm.

Identification Tag Aids Parts Follow-up



Stub of this identification card is attached to parts which Refrigeration Service Shop, Inc. returns to the supplier to be repaired. Other part of the card is filed in a card index which permits the firm to "follow-up" return of the parts from the supplier.

This Cost Sheet Determines Repairman's 'Take'

PHONE ADAMS 8146

WE SELL AND SERVICE ALL TYPES OF NEW AND USED REFRIGERATION AND AIR CONDITIONING EQUIPMENT HOUSEHOLD AND COMMERCIAL

NIGHTS AND HOLIDAYS AD 9611

Refrigeration Service Shop
INCORPORATED
66 STRATFORD AVE., DAYTON, OHIO

Req. No. .....

Nº 12801

Customer John Doe — Address 10 Monument St. — Date Jan 16, 1944.
City Dayton — State Ohio — Call No. 4269
Bill to same — Address — Inv. No.
City — State — P. O. No. 12713
Complaint Compressor on two boxes noisy.
Equipment Carrier — Serial No.

MATERIAL

	Amount	Part No.	PART NAME	PRICE EACH	TOTAL
1[illegible].98	1	Carrier	Compressor Body (exchange)		35 96
3.63	1	84419	Flywheel		7 26
1.10	1	2-56	Belt		2 62
22.7 1					

Installation	Service	TOTAL MATERIAL		45 84
Warranty	Shop	Sales Tax		
		Mileage	1. 00	
Call Back		T. T. Time		11. 50
			TOTAL	57. 34

Work Performed: Install body, flywheel, and belt.

Recommended Additional Work

Serviceman Jones — Customer

ALL SERVICE CASH WHEN RENDERED

For each service call, servicemen of the Dayton firm fill out this form which shows cost of parts installed, selling price of parts, mileage, and labor cost. From the total cost is subtracted the cost of the parts and the car allowance given the serviceman, and the serviceman then receives 45% of the balance, which permits him to make between $4,000 and $5,000 a year.

* * *

When a Commercial Food Box Breaks Down, These Repairmen Answer Calls In a Hurry

(Concluded from Page 8, Column 5)

1—Commercial food and meat markets.
2—Beverage cooling.
3—Industrial air conditioning.
4—Commercial air conditioning.
5—Out of city calls.
6—Call backs.
7—Installation work (new).

Mr. Warner feels that the greatest responsibility of the refrigeration service organization today is to take care of commercial food and for this reason he places food service calls second only to direct government work and service jobs in war plants. "Our customers did not lose any food last summer," Mr. Warner relates, "but at times they came too close to it for comfort. We really had to work around here to keep up with the calls during hot weather."

Looking forward to the postwar period, Mr. Warner feels that the firm's greatest market for new equipment after victory will be in the field of commercial frozen foods. He believes every meat market and grocery store of any size will have 0° walk-in refrigerators used for the storage of large quantities of frozen foods.

His theory is based on the contention that markets will have to buy frozen foods in much larger quantities than at present in order to make a satisfactory profit. "The small dispensing cabinets are all right," Mr. Warner asserts, "But they will never hold a carload of frozen vegetables and fruits."

Anticipating the day when merchants will be interested in equipment of this type, Mr. Warner has built an 8 x 10 ft. walk-in zero degree storage box in his own place of business. At the present time this box is used to store meats and vegetables used by himself and his employes; later it will become a demonstration of what the merchant should have in the way of frozen food storage facilities. The box is cooled by a 1-hp. Carrier compressor which powers a Carrier fan-coil unit. The box is used for storage only however, as all food kept in storage is quick frozen at a local locker plant.

Jamison Co. Appointed Airtemp Distributor

DAYTON, Ohio — Jamison Engineering Co., headed by M. M. Jamison who recently purchased all the assets of Bard, Inc., has been appointed distributor in this area for the heating, air conditioning, and refrigeration lines of Airtemp Division, Chrysler Corp., according to Paul B. Zimmerman, Airtemp vice president and general sales manager.

Mr. Jamison reports that personnel of the dealership will be retained intact with Phil Brobston continuing as office manager, W. K. Jamison as chief engineer and Art Senzer as service manager. Twenty-four hour service will be maintained on all Airtemp products, and on stokers, ventilating equipment, and special lines handled by the organization.

During the war period the company will devote its time to temperature and humidity control problems in local military establishments and war plants. The company now handles specialized refrigeration and air conditioning problems at Wright Field and other fields.

Monaghan Heads Hotpoint News and Sales Training

CHICAGO—C. P. Monaghan has been named manager of the news and sales training section of Edison General Electric Appliance Co., Inc.

Monaghan has been in the advertising and sales department of Public Service Co. of Northern Illinois since 1933.

Bell & Clark Set Up New Distributorship

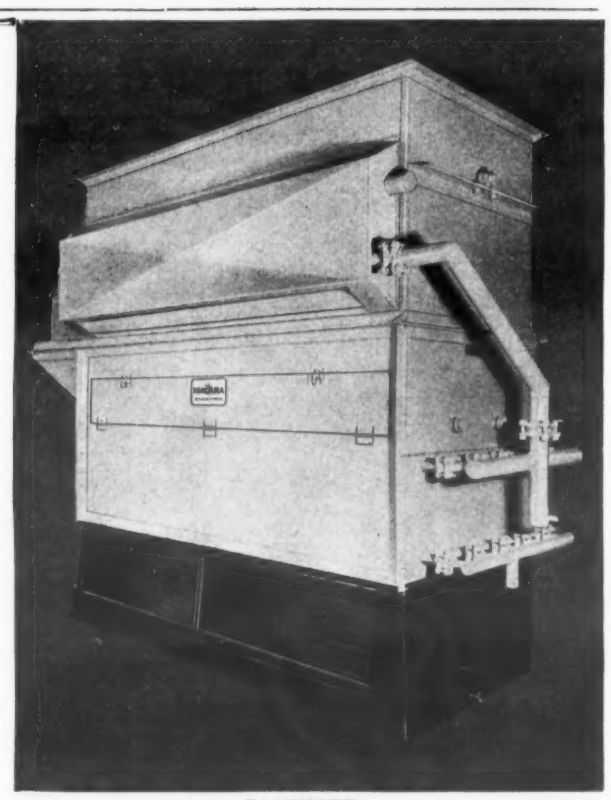
ALLENTOWN, Pa.—Chas. L. Bell and R. L. Clark, have formed the partnership of Bell, Clark & Co. at 14th and Gordon Sts. here, to serve as distributorship for refrigerators, radios, and other electrical appliances in addition to commercial refrigeration equipment.

Both Mr. Bell and Mr. Clark were associated with Raymond Rosen & Co. of Philadelphia for the past 10 years, Mr. Clark being sales manager of the refrigeration division.

Mayflower Acquires 4 Conditioner Patents

RICHMOND, Ind.—Four air conditioner patents were recently transferred to Mayflower Products, Inc., here, manufacturer of commercial refrigeration and air conditioning equipment.

Three devices were invented by Don E. Dasher. They are Design Nos. 90,062 and 90,063, both patented June 6, 1933, and No. 2,048,246, patented July 21, 1936. The other patent, No. 2,055,528, was originally issued to A. D. Greene on Sept. 29, 1936.



Inside Dope

By George F. Taubeneck

(Concluded from Page 1, Column 1)

Draft News

All the news is bad concerning occupational deferments under the draft. You can kiss your younger men goodbye in the next two or three months; and before the year is out you'll probably be reduced to the overage, 4-F's, discharged veterans, and women. Even occupationally deferred fathers may be washed out by summer.

So, the wise manufacturer, distributor, and service firm operator will begin hiring and training those women and older men now. This is a hard fact, and many employers may refuse to believe it, but it had better be faced.

Labor Draft

One reason for the pell-mell tightening of Selective Service schedules is that the Army by this means hopes to force adoption of its draft-all-labor - and - tell - them - where - to - work policy.

They are said to reason that if continued Selective Service inroads into the labor supply throws factories, industries, and essential services out of kilter or even closes them down, then national public opinion may back them up on their National Service Program.

As a step in that direction, it is being seriously proposed to classify the entire nation as a critical labor area. In critical labor areas, such as Detroit, no man can obtain a new job without a release from his previous employer and "clearance" through the United States Employment Service.

Thus the U.S.E.S. can tell him where to work, or he doesn't eat. That is, if he wants to stay in a labor shortage area. As matters stand now, if he wants to move out of the critical labor area, he can do so with impunity.

What Strikes Cost

Detroit, center of many great industries, also seems to be acquiring the reputation of being the center for strikes. In this connection, an interesting method of calling attention to what strikes actually cost the war effort has been devised.

After a recent strike at the GM diesel plant in Grand Rapids, H. W. Anderson, vice president in charge of personnel, announced that 1,000 diesel engines for landing craft had been lost at a time which landing craft are urgently needed for the invasion of Europe.

Similarly, following the two-day strike at the Great Lakes Steel Corp. plant in Detroit, Donald Nelson stated that armor plate for 75 landing craft had been lost.

This is the sort of news treatment that people can understand. Just putting it in terms of man-hours lost is relatively meaningly to all but the initiated.

Parachute Drying

For those post-engineer readers of the NEWS in service in hot, humid climates, the following dope on parachute dryers may be of use. A standard, open-type air-cooled refrigeration unit is being used successfully to supply the dehumidification called for in preventing mildew and cracks in the parachutes which save flyers' lives.

All that's necessary is to keep humidity around 50%. Drawing outside air into the dehumidifying chamber is neither necessary nor especially desirable, we are told.

Truck Problem Serious

For those manufacturers and suppliers who depend on truck transportation to make their vital shipment, nothing but bad news seems to be in store. The heavy-duty tire need is acute, with little hope of immediate solution of the problem. Even the Army isn't getting its requirements. Highways are getting rougher, trucks are wearing out, repairmen getting scarcer.

New railroad freight cars are on the way, and locomotives; so it may be well to examine your position relative to a shifting over to rail transportation wherever possible for the next several months.

Wood Critical

It is no secret that wood is rapidly becoming our most critical material. Two huge programs for making plywood cargo planes have been abandoned. Paper, cartons, packing crates, boxes — anything made of wood—become more and more difficult to obtain. Lumber will soon be on the controlled materials list.

Why, then, do we continue to make ice refrigerators from wood? More than 800,000 will be built this year—one of the biggest years in the history of the industry. Couldn't we much better spare sheet steel, or aluminum?

That Pipe Line

So many political red herrings have been trailed across the path of the proposed pipe line to oil wells in the Middle East that many of us have lost sight of its prime war purpose: oiling the war against Japan.

Thus far Uncle Sam has been oiling this war. His own sources are becoming depleted. He has suggested to John Bull that some of John's oil in the rich Middle East area might well be used to fight for Victory.

The answer has always been bound up in transportation difficulties. But when the time comes to turn all of our guns on the Nasty Nips, that Middle Eastern oil will be the nearest and most convenient to the theatre of operations.

Why not use it? Why are our own oil concerns so worried? If we keep on burning our own oil at so rapid a rate, where will these companies be 15 years from now? Can it be, after their harrowing experiences with expropriation, that they still think they can get a fair shake from foreign governments when they bring in wells abroad after the war?

Until atomic power comes along, those who control the world's oil can control the world's peace. So, if there are get-at-able oil reserves elsewhere in the world, let's use them now, lest they be used against us at some distant date!

Russian Diplomacy

Russia's recognition of the Badoglio government in Italy has thrown American pseudo-liberals into the most anguished, heart-wrenching confusion they have suffered since Stalin and Hitler signed their famous non-aggression pact.

This act, along with many other curious, unexpected, and embarrassing political moves on the part of Stalin, have one simple explanation, according to some insiders: Stalin is getting more and more impatient over the delay in the opening of the Second Front.

The Invasion is apparently 'way behind schedule. It may be years before we know the reason. Stalin seems to feel that politics, rather than logistics, is causing the delay; so he's playing some politics himself.

He is one smart gee, and the English-speaking movers of the chessmen will have to get up mighty early in the morning to outfox this masterly tactician.

Requirements: Men, Not Materials

When the Requirements Committee met some time ago to divvy up the materials between the various claimant agencies, there was agreeable surprise at the decrease in requests for materials by the Army and Navy.

But when the other claimant agencies tried their boarding-house reach, the military promptly speared the grabbing hands with sharp forks.

"See here," they said in effect, "you may have some of the materials, but we aren't going to let you have the men. We want those released laborers for the Army. And, if pools of the unemployed build up in some localities, let them move to labor-shortage areas where they can do us some good."

The military group agreed that after the Invasion is well under way a review of the whole situation would be in order. At that time, they said, new requirements for weapons might be revealed by circumstances. They want to preserve production flexibility for that occasion.

Manpower shortages are said to be most critical in these fields: lumber, bearings, foundries, mines, and transportation.

MANUFACTURERS' AGENTS PLEASE NOTE

AIR CONDITIONING & REFRIGERATION NEWS is now compiling an up-to-date list of all manufacturers' agents handling refrigeration lines. This list will be incorporated in a new personnel directory to be published late this spring for the use of manufacturers seeking distribution on their products.

If you have not received a questionnaire asking for data on your operations during the past two weeks, will you please contact us by letter? There is no charge for the listing—just let us know the lines you are now handling, territory covered, and the types of products you want to add to your line now or after the war.

Air Conditioning & Refrigeration News
5229 Cass Ave., Detroit 2, Mich.

In Air Conditioning Design

Better Allow a Time Lag for Lighting Load to Reach the Condensing Unit

DETROIT.—When calculating the cooling load imposed on an air conditioning system by electric lighting, allow a time lag for the heat to reach the condensing unit, advises James N. Livermore, engineer for the Detroit Edison Co.

Speaking before the Detroit Chapter, American Society of Heating & Ventilating Engineers, at the Rackham Foundation here recently, Mr. Livermore discussed results of a study made of the air conditioning system installed in the Edison Co.'s well known windowless office building to determine how the actual cooling load compared with the load predicted when the system was designed.

Maximum cooling load originally predicted was 450.4 tons, and on this calculation, allowing a margin of safety, two centrifugal compressors were installed, one rated at 360 tons, the other at 180 tons, said Mr. Livermore. In actual practice, the cooling load has never overtaxed the capacity of the one 360 ton machine, Mr. Livermore declared.

Even the theoretical maximum load, 388 tons, calculated recently from the results of actual tests was considerably less than the original 450.4 tons, and at that, was higher apparently than the loads actually encountered by the compressor, pointed out Mr. Livermore.

This leads to the obvious conclusion, declared Mr. Livermore, that design assumptions must be very well considered, and that every effort should be made to prevent the **"safety margins"** allowed in calculations from becoming cumulative and thus causing a gross over-estimate of the load.

But, he cautioned, since so many assumptions have to be made in calculating the cooling load on an air conditioning system, there is no justification for extremely refined calculations for total cooling load."

As previously indicated, one big error in calculating the cooling load that was made on this system, and is frequently made, according to Mr. Livermore, was that of assuming that the load due to artificial lighting is immediately transmitted to the compressor.

Cooling load due to lighting is not a constant factor, for the heat effect produced by the lights is stored in the walls and furniture of a room apparently, and is gradually released said Mr. Livermore.

Edison engineers had designed the system for a constant lighting load during the day of 119.6 tons, based on the rated wattage of the lamps. Tests showed, however, that the lighting load actually varied from a low of 36.2 tons to a high of 125 tons with the mean tonnage considerably less than that predicted.

Another interesting point brought out in the study was that it is not necessary to maintain extremely close temperature limits on the chilled water used in the Edison Co.'s indirect system to provide satisfactory room conditions, Mr. Livermore revealed.

The system as installed closely controlled the temperature of the chilled water through devices which depended for their operation on varying condenser water flow in response to slight changes in chilled water temperature.

During a test an operator manually regulated the compressor speed and adjusted condenser water flow, and although the temperature of the chilled water varied for short intervals from 40° F. to 54° F., there was no perceptible change in comfort conditions within the conditioned areas, said Mr. Livermore.

Another test made during the study of operation conditions analyzed the radiant heating and cooling effects of the glass block used throughout the Edison building.

Surprisingly enough, Mr. Livermore declared, tests with black bulb thermometers revealed much less radiant cooling effect through the glass block than radiant heating. With the outside temperature at 10° F. there was 1.2° of radiant cooling 30 inches from the inside face of the block.

Tests during a summer afternoon, however, showed 3.5° of radiant heating at a distance of 18 inches from the block, and a perceptible amount of radiant heating as far away at 12 feet.

The radiant heating effect was strong enough, said Mr. Livermore, to necessitate the installation of venetian blinds.

New 'Thinking' Valve Designed to Control Room Air Conditions

WASHINGTON, D. C.—The United States Patent Office has recently issued Patent No. 2,342,328 to Dr. Willis H. Carrier, chairman of the board of Carrier Corp., covering a "thinking" valve with wide potentialities in the air conditioning field.

The "thinking" valve anticipates the requirements of any room by admitting to an air conditioning unit, cold or hot fluids in exactly the desired amounts automatically, and with no need for change in setting throughout the year. Once it is adjusted to give desired comfort during summer and winter seasons, the valve will assure proper compensation for changes in weather conditions or for variations in requirements of the air conditioning system arising from the number of people in the room.

Although specially designed for use in connection with comfort air conditioning the valve will also fill a need in a large number of industries where heating and cooling liquids are required at different times and in varying amounts.

For the first time, it is claimed, the same control apparatus is adapted to admit cold or refrigerated liquid in one flow circuit under conditions requiring cooling, and will admit warm or heated liquid in another flow circuit under conditions requiring heating, both circuits feeding to any desired air conditioning or industrial processing units.

Heat From Conditioner's Condenser Gas Reduces Humidity In Radio Shelters

'Condenser Reheat Principle' Proves Itself By Holding 50% R. H. on Instrument Job

YORK, Pa.—Air conditioning which heats while it cools now protects sensitive radio equipment in American battle areas and may point the way to a new type of controlled indoor weather in peacetime, refrigeration engineers of the York Corp. laboratories have reported.

The system, which blends both heat and cold together, makes practical a constant and accurately balanced ratio of temperature and humidity. Used by both the Army and Navy, the small self-contained unit has helped solve the problem of high tropical humidity in shelters housing critical instruments.

By actually reheating the air slightly after it has been chilled sufficiently to remove all unwanted moisture, the equipment is able to maintain a constant humidity of 50% in the conditioned space although the surrounding climate may frequently reach the moisture saturation point. It prevents temperature from falling too low by putting back automatically into the conditioned space some of the heat units which it has taken from the air. This heat is usually discarded as waste in the conventional system.

Air conditioning and humidity control are vital to many new types of high frequency radio equipment, not only to protect the sensitive apparatus itself but to safeguard the men who operate it as well, according to B. E. James, head of York's equipment development laboratory. The problem is complicated by the fact that in tropical regions engineers must contend with the intense heat created by their own equipment as well as with the weather outside.

Even in temperate zones it is frequently impossible for ordinary air conditioning to provide complete comfort when humidity rises excessively and under such conditions occupants are apt to experience either a feeling of clamminess or unusual chill. For example, on a day when the mercury is only 70° but the humidity stands at 90° or over, excessive moisture can be removed from the air only by lowering the temperature to such a degree that it becomes uncomfortably cool.

Mr. James explained that the condenser reheat unit solves this problem by interrupting the normal cycle of a conventional air conditioning system. It taps off some of the hot refrigerant gases after they have left the compressor and are on their way to discharge their load of heat units through a condenser.

Instead of flowing directly to the condenser, the hot gases are passed through another coil which heats the air as it leaves the evaporator.

Prefabricated Utility Unit Built Into Interchangeable Wall Sections and Containing All Kitchen Fixtures Proposed for the Modern Postwar Home

Bathroom Fixtures Similarly Designed

DETROIT — The item attracting greatest interest among appliance men attending the Designers' Show, held recently at Detroit's Scarab Club, was a prefabricated utility unit embodying all the kitchen fixtures found in the modern home.

Major emphasis at the show was upon transportation for the postwar world—autos, transcontinental buses, ships, planes, and helicopters, but several planners presented sketches and models of streamlined ranges, refrigerators, and radios.

Among these firms were George W. Walker, Duane Swibold, the Puffer Engineering Co.; and Sundberg-Ferar, whose prefabricated utility unit will be produced after the war by the Virginia Lincoln Corp. of Marion, Va.

The material used will be Valinite, a product of the Virginia company developed by them for the use of the Army Air Forces. It is molded under low pressure to form bath and kitchen fixtures integral with standardized interchangeable wall sections.

The cantilever beams against which the wall sections are set are embedded in a concrete foundation and are built to carry the entire structure of the house. All gas, electric, sewerage and plumbing outlets are set in the concrete foundation, and connected to the utility unit by flexible connections.

The unit itself is shown in two major designs, although the interchangeability of the wall sections makes any floor plan possible. The first, designed for a small kitchen, follows a U pattern, with range, refrigerator, sink, dishwasher and storage cabinets arranged around the outside of the U.

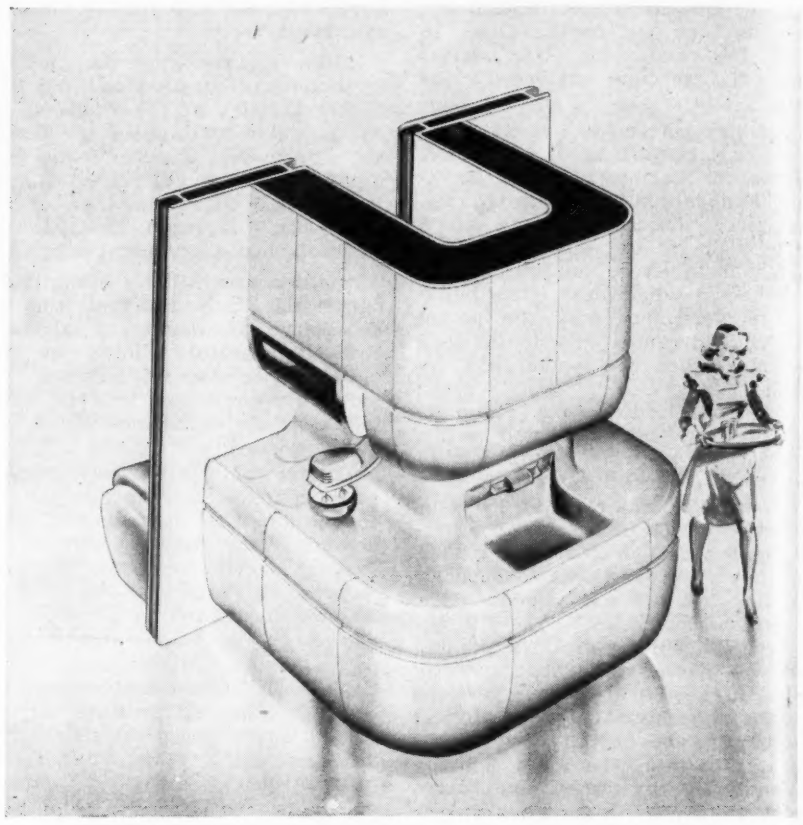
Smaller appliances such as electric mixers and toasters are built into hinged sections that swing down for use. The lower shelves are arranged with racks for vertical standing of the flat dishes, much like the record holders seen in music store windows.

On the other side of the partition, the bathtub and shower fit into the inside of the U, the wall sections rising to the ceiling. Flanking on either side are lavatory and washbasin. Again, all fixtures are built in to eliminate square corners.

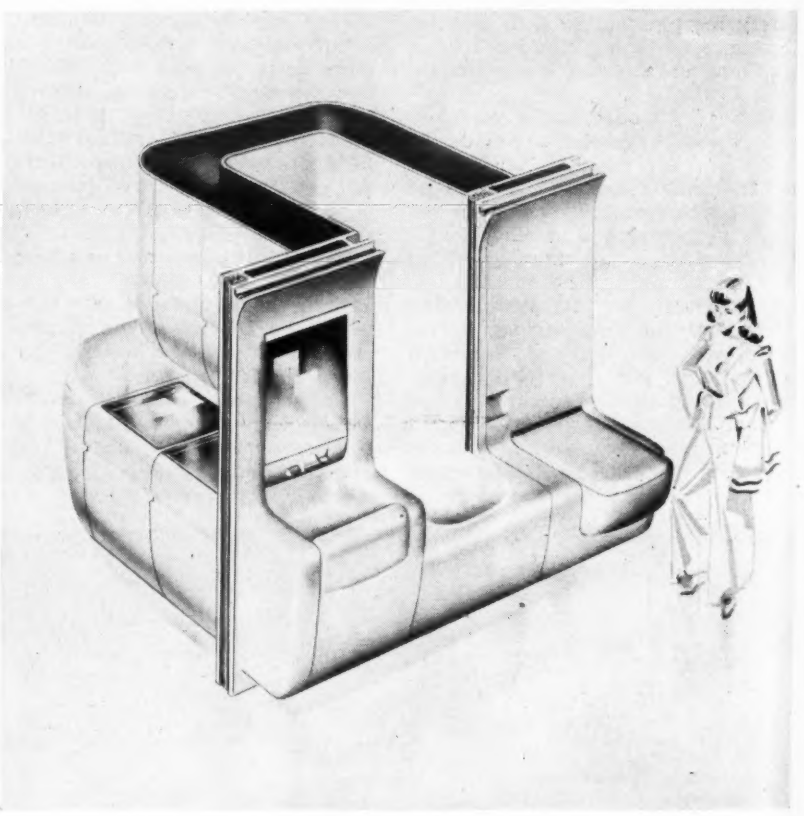
The other major design illustrated runs the kitchen appliances straight along one wall, with the bathroom unit similarly set up on the other side of the partition. The interchangeable wall sections again make their arrangement optional.

Outstanding conveniences are those of accessibility, manipulation, and ease of cleaning. Choice of color and general eye appeal also will count when postwar housing becomes available to Mr. and Mrs. America.

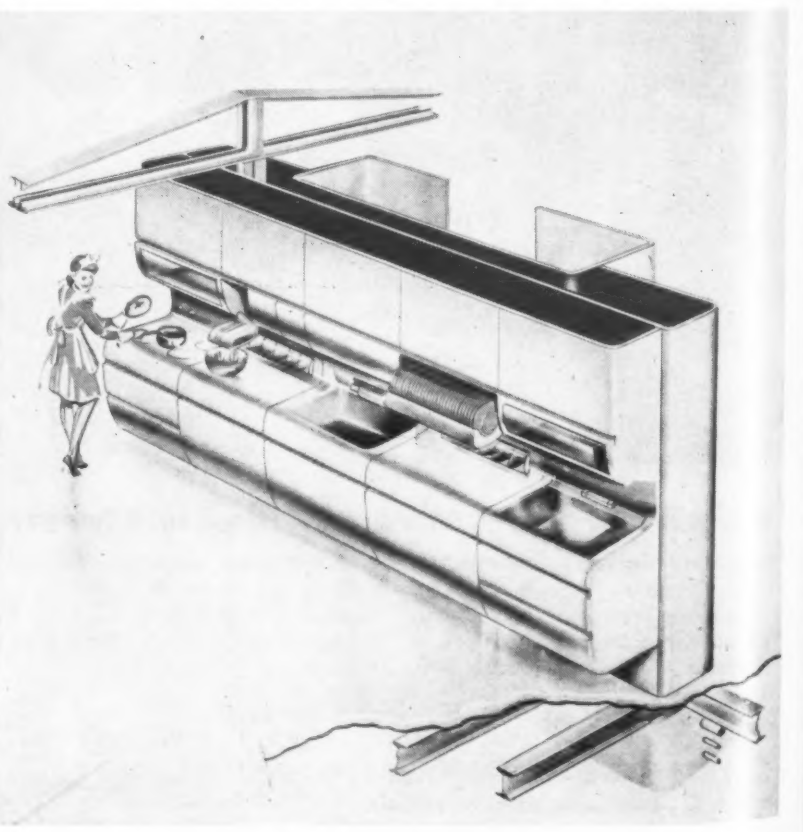
"Coming to This Theatre Soon!"



This U-shaped unit is designed for a generally square kitchen, with range, kettle cabinet, sink, refrigerator and washer the probable arrangement.

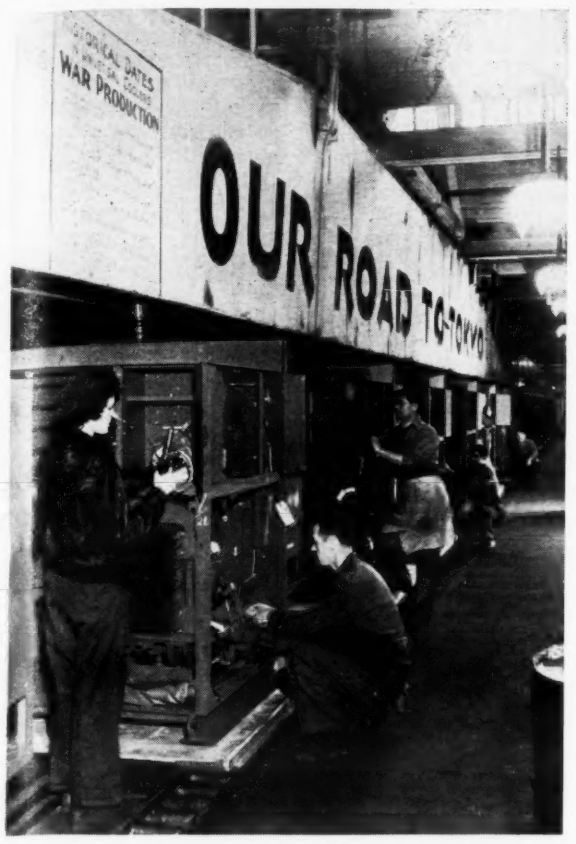


The same section in reverse. Wash basin, built-in shower or tub, and seat all part of the same structural unit.



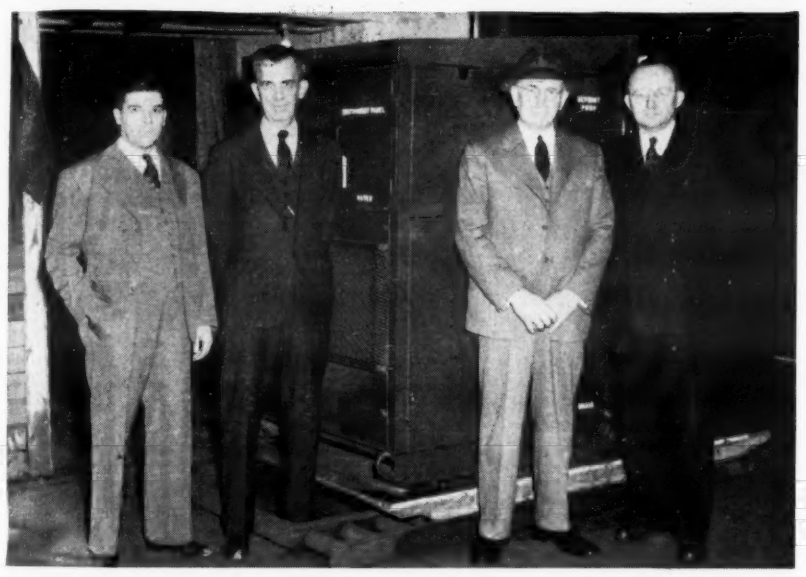
This design is practical in the larger kitchen, with the same arrangement order, however, as that shown above. Maid, extra.

5,000th Unit For Armed Forces From One Firm



The 5,000th unit recently rolled off Universal Cooler Corp.'s "Road to Tokyo" consisting of the assembly-line for the complete two-temperature refrigerating units which are used by all branches of the armed forces. More than 325 feet long, the "Road to Tokyo" has 18 sub-assembly stations and other refrigeration production innovations. The above illustration was featured in "Fortune" magazine.

They Guide Universal Cooler's War Production



On hand for completion of the 5,000th unit were (left to right) George Keltner of Universal Cooler Corp.'s material control department; Government Inspector K. C. Besse; Universal Cooler Corp. President F. S. McNeal; and Works Manager A. E. Knapp.

San Francisco Is New Section of A.S.R.E.

SAN FRANCISCO — The Council of the American Society of Refrigerating Engineers has recently voted to approve the petition of a group of members in the San Francisco area for the formation of a local section, the 16th recognized local group of the 39-year-old Society.

Following an organization meeting in San Francisco Jan. 14, at which A. B. Stickney, president of the A.S.R.E., and Alfred Chadburn, assistant secretary, spoke, the members in that city formed their local organization, electing the following executive committee:

Nels Rosberg, Merchants Ice & Cold Storage Co., chairman; Kenneth D. McGrew, Van Arsdale-Harris Co., secretary; Harry T. Holbrook, Union Ice Co.; Edward Simons, Redwood Manufacturers Co., and Harry T. Whyte, Pacific Fruit Express Co.

Mr. Whyte is a former Council Member of the A.S.R.E., and Mr. Rosberg a present member of Council; Mr. Rosberg also served a few years ago as chairman of the Los Angeles Section.

Regular monthly meetings are held by this new group in the Engineers Club of San Francisco, and proof of the rapidly growing interest in refrigeration and air conditioning in that area lies in the fact that, starting with 16 members, the new section now has enlisted 87 members.

Officers of the local group have requested that the official Charter be presented by Helen H. Peffer, editor of "Refrigerating Engineering."

Heads Up Engineering For Kold-Hold Co.

Already busy with engineering problems and new design matters is H. W. Whitmore, shown at his desk at Kold-Hold Mfg. Co., where he is the new chief engineer.

Freezer Temperature Too High, Meat Lost In Gov't Warehouse

QUEBEC CITY, Quebec, Canada—Improper freezing was said by the Municipal Health Inspection Department to have resulted in contamination of 500,000 pounds of meat in a government warehouse in Quebec City.

The municipal department said that the meat had been placed in a room where the temperature was 22°, whereas a temperature of 5 to 0° was required to preserve the meat. An order that none of the meat be sold was issued by Federal, provincial and municipal officials after a city butcher complained to the municipal health department about the quality of meat which he had received.

* * *

Whitmore Takes Post Of Swart, Now With Aviation Corp.

LANSING, Mich. — H. W. Whitmore has been appointed chief engineer of the Kold-Hold Mfg. Co., announces James R. Tranter, president.

Mr. Whitmore comes to Kold-Hold from the Automatic Products Co., where he was employed for two years. Prior to that time he was associated for 10 years with the General Refrigeration Division of Yates American Machine Co.

Mr. Whitmore succeeds Richard H. Swart, now with the development department of Aviation Corp.

Kold-Hold manufacturers subzero and dual temperature processing and testing equipment as well as cold plates and lowsides for transportation of perishables.

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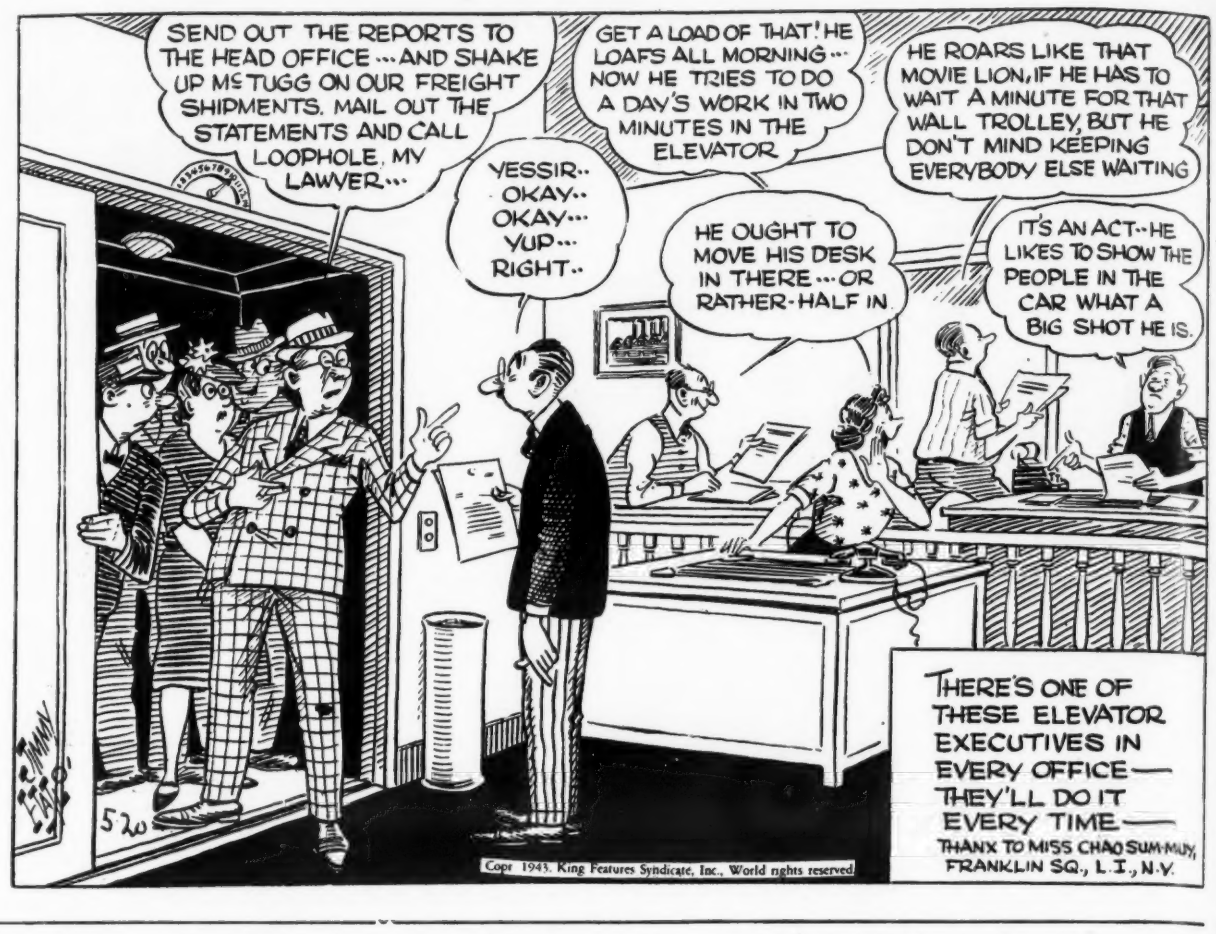
They'll Do It Every Time

By Jimmy Hatlo



Truman Report Makes Sense

TWO names of fact-finding groups which study and contribute to the war effort are finding great favor and general acceptability all through government and the public as well. These names are "Truman" and "Baruch." It's a great thing for the country that such confidence can be placed in these names in a time of great confusion and sore need.

Baruch works for the Administration. The Truman committee works for Congress. Both have substantial appropriations available for their investigations, and thus are able to employ experts for their fact-finding investigations. It's interesting to note how often their conclusions run parallel.

The latest Truman committee report takes up in some detail the problems contingent upon the transition from war to a peace economy. It does so with considerable acumen. Whether or not its recommendations will be followed in light of the rather antagonistic attitude of some members of the Palace Guard is another matter, but considerable hope can be found in the resurgence of independence in Congress.

TAKE UP THE SLACK WITH CIVILIAN GOODS

In brief, the Truman committee believes that the slack in production caused by cuts in war production should be taken up smoothly by a gradual return to making things for civilians. This has long been the attitude of the War Production Board, but thus far it has been stymied by the Palace Guard and a military clique.

It has been the Palace Guard contention (expressed forcibly at times by Harry Hopkins) that the public is too complacent, that it isn't suffering enough. To resume production of items civilians need and want, these men theorize, would be to increase that complacency.

On the contrary, avers the Truman report: the people aren't too complacent. Furthermore, if cutbacks in war production throw large numbers of men and women out of work, if plants lie idle, if communities have their source of livelihood, THEN the attitude of the public will be dangerous and deleterious to the war effort.

Those who are out of work, of course, will be sore. Those still in war production will become frightened and *slow down* their output to save their jobs, or make them last longer. This situation is already with us in many localities.

LACK OF GOODS TO BUY MAY BRING INFLATION

Another angle stressed heavily in the Truman report is that of inflation. As our supplies of consumers goods are steadily depleted, prices are bid up, black markets grow, and workers—unable to buy much with what they earn, and having their debts paid off and being up to their ears in war bonds—lose their incentive to continue making vitally needed war goods.

What the Truman committee is saying, simply, is that unless resumption of production for civilians is permitted in idle plants, with idle inventories of materials, and by idle labor, the whole war effort will suffer.

This makes a lot of sense.

The Office of Civilian Requirements of the WPB has prepared a list of things civilians need badly, with quantity estimates, and priority-of-resumption recommendations. It would be ready to act, if given the go-ahead.

THE BIG QUESTION IS 'WHEN DO WE START?'

However, neither the Truman committee nor anybody else has done much to solve the vexing problem of the *timing* of resumption of civilian manufacture relative to the competitive angle.

Is it fair to permit one manufacturer of refrigerators, for instance, to get back into production, while another manufacturer is still turning out aircraft parts full tilt?

War Production Board policy makers are said to lean toward the idea of assigning each pre-war manufacturer of refrigerators a quota for a 12-months period (based on his 1941 output), and then giving the manufacturer the right to make that quota *any time* within the period—withholding the release of new quotas until *all* manufacturers had produced the first quota or signified their intentions of relinquishing their right to that production.

Under the American system of free enterprise a refusal to let no pre-war manufacturer into the business can hardly be justified, and it seems likely that some provision may be made for experimental, "token," or "educational" production by any newcomers which seem to have the facilities to give it a try.

The Palace Guard, of course, would like to keep the controls on as long as possible. That such widely respected authorities as the Truman committee and the Baruch group go sled-length in their recommendations that we return to private enterprise and freedom to produce as soon as militarily possible is heartily encouraging.

LETTERS

PROCEDURE TO OBTAIN DEFERMENT OF REPAIRMEN

N. J. Trincanati Electric Co.
Niagara Falls, N. Y.

Dear Sir:

We take this occasion to write to you on behalf of one of our refrigeration servicemen, who has been classified for the Army as of today.

Can you advise just what we can do for this man, or what procedure should be followed in obtaining a deferment for him. His classification is 2B until June, and there has been a 42A form on file with the local draft board for the past year. On his notice, there also appears the statement that he is entitled to appeal, within 10 days. Can we do this now or later?

While it is the farthest thought from our mind to hinder the war effort, yet, we do believe that is exactly what taking this man away means. Without a doubt he is the best man we have, and therefore, we want to do everything in our power to keep him and also to present his case as fairly and as intelligently as possible. And that is why we are asking your aid, that in your past experiences, you might have had other similar cases where the local board was a hard nut to crack. And if so, if you would be kind enough to pass the information on to us.

Any aid that you can render will be greatly appreciated by both ourselves and the serviceman. May we have an early reply on this matter, and thank you.

N. J. Trincanati.

Answer: Your letter does not make clear the exact status of your man. You say that he has been "classified for the Army as of today" which I would take to mean that he has been put in Class 1-A, but then further you say that his classification is "2B until June."

If he is in 2-B then you do nothing until his deferment is up, at which time you can request for a renewal of it.

If he has been put into 1-A then your best bet is to follow the procedure suggested in an article in this issue of the NEWS, referring the Local Draft Board to Selective Service Memorandum 115-B, and asking that his case be processed under the terms of that memorandum. If the Local Board refuses to do this, you should call it immediately to the attention of the State Selective Service Headquarters and probably also to be on the safe side, file an appeal from the 1-A classification within the time limit.

MAX PETRUSCHKA REPORTS FROM PALESTINE

Max Petruschka
Refrigerating Engineer
Syriani House
Bethlehem Rd., Jerusalem
Palestine

Editor:

Some years ago I was one of the readers of your paper in this country—through the Kelvinator Distributorship and later Messrs. Hamashbir Hamerkazi, the York distributors, both of Tel-Aviv—but I haven't seen any of your papers since the beginning of 1940.

Difficulties of wartime supplies have influenced the business in our line in Palestine at least as much as anywhere else. New machines don't come from the former countries of supply, service is very difficult with locally produced spare parts, and so on. You hear most probably the same from all corners of the world, so far as news can reach you at all.

Quite a number of the younger men of the refrigeration personnel of Palestine has volunteered for service in the British Army. We have no conscription here as in the U. S. A. or the U. K., but a rather high percentage of the eligible people joined up.

Some of the refrigeration service men are now serving "somewhere in the Middle East" in a special unit of the Royal Engineers which is in charge of the refrigeration plants of various Army institutions.

We of the "old guard" are, if not working in the service shops, doing our bit on the home front in the various government control departments or other industries working for the war effort.

From your former correspondence with your Palestinian acquaintances you will certainly know all about the position of the refrigeration business. Most of the distributors were forced to liquidate their firms during the two years preceding the war and the new start, when conditions permit, will be almost the same as 10 years ago, from the very bottom.

Anyhow, the military situation makes it now easier to hope for an early end of the struggle and that is the main reason for writing you today.

I am highly interested to acquire various books of the "Refrigeration Library" published so far, and to subscribe to your paper. As I need an import license before a definite order can be placed and the money transferred I would be obliged if you could send me as soon as possible a pro forma invoice for the books mentioned below and a one year's subscription. Should some more books of this kind have been published—my last information originates in your ad in No. 564 of 10-1-40—you may add them to the lot.

I am anxiously expecting your early reply and would be pleased to renew the former relation to your lively paper.

MAX PETRUSCHKA

P.S. If you think I could be of any service to you, please don't hesitate to write me.

Dealers Want Help From Manufacturers To Relieve Repair Parts Situation

NEW YORK CITY — The repair parts situation is tougher now than it was a year ago, and appliance dealers want manufacturers to help them with this problem, it was brought out in survey of 400 dealers conducted for "McCall's" Magazine by Albert P. McNamee, who last year made a similar survey.

Dealers would like manufacturers to facilitate the handling of parts orders and suggest that manufacturers consider the possibility of setting up parts depots in strategic areas to improve deliveries of parts, Mr. McNamee reports.

Examining the subject of mortality among dealers, which has now reached a maximum of 35% in the cities covered, Mr. McNamee believes that it is occurring at a slower rate than was indicated a year ago, and that its extent in the future will be influenced considerably by the length of the war and the strength of the individual dealer's financial reserves.

This mortality figure among dealers would actually be higher, Mr. McNamee says, if it included those dealers who are still in business today, but who have completely divested themselves of all identity with the appliance and radio business.

DEALERS SUGGEST CHANGES

Conclusions of the "McCall" study are that if the manufacturer is genuinely concerned with maintaining his dealer organization, certain remedies or changes are indicated.

Principal among these, requested by the dealers, would be: (1) facilitating the handling of parts orders; (2) consideration by manufacturers of the advisability of establishing parts depots in strategically located cities; (3) inaugurating or expanding service man training programs; (4) sponsoring by manufacturers, possibly through national advertising, of trade-in or "swap" campaigns; (5) restriction of repairing by the manufacturer except as a service to the dealer, and (6) scrutiny of charges made by independent service companies, and where possible, standardization of prices.

An analysis of the conditions reported reveals that stocks of appliances and radios now in possession of dealers are almost entirely depleted. Of the appliance and radio dealers interviewed more than 49% had absolutely no appliances or radios on hand, whether new or used. Consequently the servicing of appliances has registered substantial increases this past year, with indications of growth in the future.

The almost non-availability of some appliances and radios and absolute non-existence of others are bringing an ever increasing volume of obsolete and almost non-repairable appliances and radios into the dealers' stores for servicing which under more normal conditions would be junked without hesitancy.

HOW DEALERS SURVIVE

It was found that, in an effort to continue in business, the dealers have resorted to numerous devices—taking on other lines of merchandise; setting themselves up in the parts business; making servicing their sole source of income; maintaining servicing departments even though with drastically reduced staffs.

Major difficulties are those of holding or obtaining experienced service men; lack of funds to invest in training inexperienced men or of finding men willing to accept training period wages. Training programs are being conducted, however, or supported by manufacturers, electrical associations, and utilities.

The McCall investigation further discloses that slightly less than half of the interviewed dealers are engaged in the business of buying and reconditioning appliances and radios. This is due largely to the difficulty in obtaining used equipment for reconditioning because of OPA failure to place ceiling prices on trade of appliances in private sale. Here, with demand so intense, prices can be placed far above anything the legitimate dealer is in a position to pay.

In spite of these many problems, the servicing function is proving a profitable operation for the majority of dealers. However, concludes Mr. McNamee, if manufacturers, individually or collectively, would underwrite the suggestions brought to light by this study, results decidedly worthwhile should be realized.

Nee Appointed Hotpoint Atlanta Sales Manager

CHICAGO—J. T. Nee, formerly Hotpoint's War Housing installation supervisor for the southeastern area, has been appointed Atlanta district sales manager.

Mr. Nee is serving his 26th year with the Hotpoint organization, having joined the service department of the firm in 1918. Since 1919 he has been in the southern area as commercial cooking service supervisor, electric range sales representative, and commercial cooking sales manager, successively. Immediately before the war, he was Atlanta district range sales specialist. He will direct operations in the district from an Atlanta headquarters.

Dinkel to Represent Crosley on Coast

CINCINNATI — N. B. Dinkel of Alameda, Calif. has been named to represent the Crosley Corp. in the Pacific Coast area.

Mr. Dinkel first became associated with the major household appliance industry in 1927. Previous to that time he had been secretary and treasurer of a company in the securities business in New York City for some years. Most of his experience in the major appliance field has been in San Francisco and other Pacific Coast cities.

During the past two years, his efforts have been devoted entirely to war work in the San Francisco bay area. He was in charge of a recruiting program.

Rietze & Co. Takes Allen-Bradley Line

LOUISVILLE, Ky.—Rietze & Co. at 1017 E. Broadway here, headed by H. Edward Rietze, Jr., has been appointed sales representative for the Allen-Bradley Co.'s line of electric controlling apparatus in the southern Indiana and western Kentucky territories.

Mr. Rietze is a graduate of Washington and Lee university, and when he left college in 1925 he joined the United States Foil Co. In 1930 he moved to the Electric Refrigeration Co., later joining Tafel Electric Co. Prior to forming his new company on Dec. 1, 1943, Mr. Reitze was sales manager for Wilhelm & Schnur Electric Co.

Westinghouse Uses New Plan To Teach 'Trouble Diagnosis' To Servicemen

Inexperienced Learn Quickly With the 'Analyzer'

By Ross H. Potter

MANSFIELD, Ohio—"Because of the high percentage of newly trained men, by far the biggest problem in appliance servicing today is trouble diagnosis."

"By the end of 1942, half of the country's trained appliance servicemen had been lost to war or to war industries. Today, that figure approaches 70%."

"One of the main difficulties confronting service schools has always been the lack of open working models. Parts and assemblies are hidden within housings and behind walls. It took an actual wartime shortage of appliances to bring out the practical solution: cutaway models in motion on a demonstration board."

These three excerpts from the speeches of two Westinghouse executives express the basic issues behind the company's service schools that will be presented all over the country during 1944.

More than 40 Westinghouse distributors from Michigan, Ohio, Pennsylvania, Kentucky, and West Virginia, together with utility executives and service managers met in Mansfield March 7 and 8 for a preview of the company's service program scheduled for the year ahead.

Highlights of the entire program were the operational demonstrational boards, each one mounting a complete appliance in action, with defective assemblies that could be dubbed in and consequent trouble symptoms recognized.

The need for such apparatus followed a mid-1943 countrywide survey by the company, checking on the effectiveness of the Westinghouse training schools. A clearcut need was shown for more schools, but wartime had cut into the supply of available models. These were needed for actual use. The demonstration boards were the answer.

Among the several appliances finally mounted by the company's engineers, the refrigerator model is outstanding to watch. To the refrigeration serviceman, this board is as intriguing as a full floor layout of an electric train.

A Demonstration Board That Can Create Its Own 'Troubles'

L. K. Baxter (right) Westinghouse appliance department service manager, points out the control panel to J. H. Ashbaugh, manager of the department. The analyzer is part of the demonstration board which is made up of cutaway and glass tube parts that permit visual inspection of the operation of a household refrigerator system in a training course for repairmen. The control panel makes it possible to produce many of the common "troubles" found in a system.

Installed, and conspicuously posted, are a standard compressor, hooked up through interchangeable controls with a fin and tube condenser or a plate condenser, both present on the board.

The fin and tube condenser, fan-cooled, leads through its float valve to a transparent plastic evaporator. The float valve has a sight glass permitting observation of the valve in action.

The plate condenser leads to the evaporator through its impedance tube, a capillary connection which does not need a float valve. Both condensers however have glass sections in their tubing, placed at the beginning, midpoint, and endings, to show the changing refrigerant, in both liquid and gas forms, in operation through the system.

Suction and discharge line gauges register pressure changes as they occur. Six sets of controls are posted, one in perfect order, the other five having specific defects which show up in various ways through the system in operation.

Keyboard of the system is a panel of 12 switches in the upper left corner of the layout, each one of which produces physical symptoms in the system of troubles that occur consistently in refrigeration repair.

Some of these troubles, such as stuck float valves, shortages of refrigerant, grounded circuits, can be recognized at any one of several points in the system. Others can be diagnosed only at one point. The board is able to cover all of these, in motion.

Chief aid in checking for trouble was the Analyzer, an instrument developed by Westinghouse engineers to simplify identification of repairs in electrical circuits. For mechanical defects, however, there is no short-cut, the program emphasized. Trained experience is the only answer.

The procedure followed by the service schools is one that emphasizes a change-of-pace presentation to hold and challenge the interest of those present. Each trouble area in the system is covered first of all by a film discussing complaints that will be met, symptoms to be looked for, diagnosis of the trouble, and treatment.

After the film, the material it presented is followed out on the service charts issued by the company. Questions from the floor come up to clarify any dubious points.

The operational demonstration board is then put into action and the various repair problems brought up are illustrated and worked out where everyone can see them. A running fire of discussion and first-hand inspection always goes along with this stage of the instruction.

Final review of each subject under discussion is covered in a written true-and-false quiz in which everybody takes part. Not only do the listeners get an idea of how much they have been able to take in, but any final points raised by the quiz can be finally settled.

This same procedure is followed through for each of the appliances Westinghouse makes. The major appliances have operational boards. The smaller ones are discussed just as thoroughly, but being simpler in construction the Conservice manuals cover their service angles fully, and discussions can be based upon these.

Three new Conservice manuals have been added this year, covering electric heating appliances, vacuum cleaners, and fans. They bring the total to eight. Published periodically also is the Service Beacon, now issued in magazine form for newly-worked-out shortcuts in service procedure.

The Mansfield plant itself stocks over 16,000 service parts, a supply upon which the continuous service school program is necessarily dependent, explained J. E. Hugo, central district service supervisor, if service demands are to be responsibly met.

Trouble diagnosis has become the serviceman's biggest problem, he pointed out. The need for thoroughly organized service schools is greater than ever before.

It is not alone a question of newly trained men, he added. The field of required servicing has extended tremendously. Not only are there more people to serve, but for many of them old and makeshift models are all they can get. Yet their appliance needs in many cases are greater than ever before.

The Conservice plan emerged in 1943 as the result of discussional clinics that the company held in

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Spotlight on Service Now Will Make It More Important Postwar, Says Baxter

(Concluded from Page 16, Column 5)

various parts of the country throughout 1942, explained L. K. Baxter, service manager for Westinghouse.

After Pearl Harbor dealers were faced with the necessity of working out plans of how to stay in business. Servicing seemed to be the answer, but service on a much bigger scale, and on a more thoroughly organized basis.

Before then, Baxter admitted, the so-called service schools usually were a matter of showing the latest models to distributors and dealers, with service discussions confined mostly to the few changes that the new models featured.

The coming of war, with its absorption of trained men into the armed forces and into war industries, plus the sudden cutting off of appliance production, changed the picture completely.

Servicing emerged as a separate business activity, one that was going to have to go ahead on its own and bring in a profit. The need was apparent for non-technical servicing instruction for the new men that must be used as replacement material.

Thus 1942 saw a big change in service school techniques. Simplified manuals, service cards, business forms that covered essential steps but were easy to handle, chart lectures, films, and closer contacts with dealers and their problems.

The discussional clinics stressed the need for training of brand new men, and that they would need simplified forms of service reference material on every Westinghouse model still being used in the field.

The Conservice plan started out in 1943 on that basis. It offered a complete course in basic electricity, using sound slide films, written guides, and quiz forms. Product courses were laid out for refrigerators, ranges, laundry equipment, and water heaters, with Conservice guides on each appliance.

A dealer survey in mid-1943 showed the need for more schools. The shortage of even enough appliances for laboratory dissection finally produced the operational demonstration boards now in use.

No company after the war, Baxter stated, will be able to soft-pedal the service guarantee behind every sale. War conditions have brought out too sharply the value of a good product backed by a service warranty.

No unit will be able to be sold on a this-won't-need-any-servicing basis, he predicted. Dealers themselves are convinced of this, and recent national surveys have shown how many of them plan to augment and emphasize the service side of their business.

Heavy Demands Still Placed on Copper

NEW YORK CITY — New war strategies, and the conditions for carrying them out, have placed heavy demands on copper, according to Walter Janssen of the Metals and Minerals Unit, Bureau of Foreign and Domestic Commerce.

At the present time, he stated, the amount of available copper and the demand for it are almost exactly in balance. Labor shortage or transportation delays, either here or abroad, would upset the precarious balance of demand and supply.

Copper's standing in the surplus metals' list is so insecure and uncertain that workers leaving their jobs even to take regular summer vacations might effect a serious production crisis.

Small arms manufacture has been cut drastically in order to fill present artillery requirements. However, what seems to be presently excess material is not to be released for civilian consumption, for the varying quantities demanded by the War and Navy departments are too great and too important to risk possibility of shortage, according to Mr. Janssen.

Though our supply is approximately 10 times as great as that of the Axis' output, and our production of new copper tonnage has doubled since Pearl Harbor, the difference between the output and the consumption still is only an approximate 5%. Actual figures on any metal wealth belonging to the Allies is not made public.

Apprentice Training School In Syracuse Opens Repair Course

SYRACUSE, N. Y.—A new course in the repair and maintenance of both domestic and commercial electric refrigeration systems has begun at the Apprentice Training School here, to prevent Syracuse from becoming a critical area in this type of skilled labor, Dr. John F. Hummer, acting superintendent of schools, announced.

The classes have been established, according to Dr. Hummer, upon the direct request of Syracuse businessmen working as a committee with James F. O'Brien, training coordinator of the War Manpower Commission; Bernard O. Larsen, principal of Apprentice Training School, and Donald M. Kidd, Syracuse director of vocational education.

Classes for beginners begin at 8 a.m. and run until 5 p.m. The classes are daily and continue for five weeks. Registration is open to all men in Syracuse interested in being trained in refrigeration. Instructor for the class is Carlton J. Kresser who has had 15 years' experience in the field of electrical refrigeration

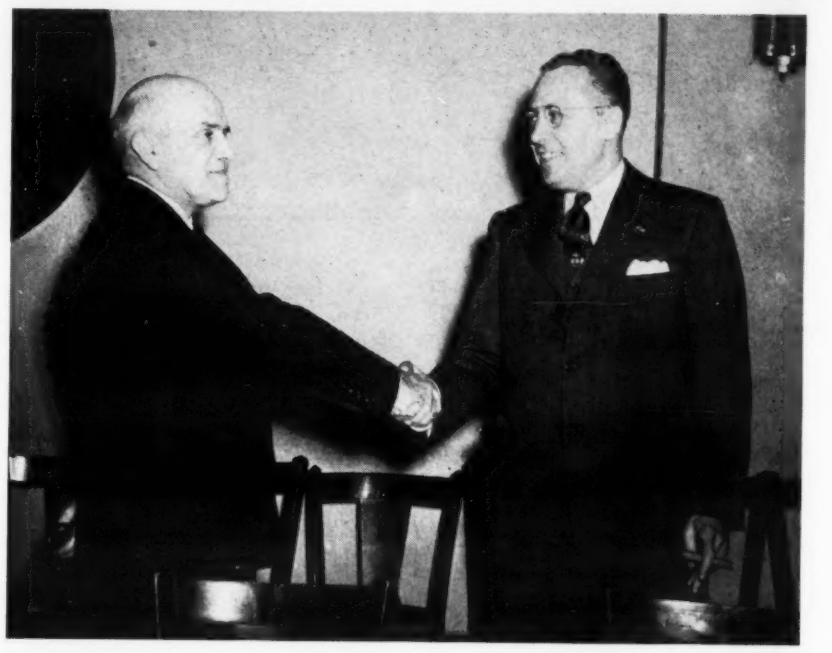
Additional classes have been arranged for men now engaged in electrical refrigeration work. This class is in session Monday, Wednesday and Friday from 7 to 10 p.m. and is under the direction of A. W. Snyder of the Gould Farmer Co.

"It is necessary that a new source of trained experienced mechanics in the refrigeration industry be developed in the immediate future," Dr. Hummer said, "if Syracuse is to avoid a critical labor shortage in this type of work."

The Syracuse committee serving in cooperation with Dr. Hummer includes Robert H. Wilson, United Refrigeration Service, chairman; Ray D. Hurst, Westinghouse Electric; Ted Glow, Central Service Supply; David Rosenthal, Frigidaire, and Mr. Snyder.

Topics to be covered in both classes include the fundamentals of refrigeration, refrigerants and refrigerant controls, compressors and the compression system, electric motors, etc.

'Terry' Terhune Takes Leave of His Longtime Chief



Louis Ruthenburg (left), president of Servel, Inc., wishes E. A. Terhune, formerly sales manager of the electric refrigeration and air conditioning division, good luck on his new job as vice president of O. D. Jennings & Co., vending machine manufacturers. In taking leave of Servel Mr. Terhune ends an association of many years standing with Mr. Ruthenburg, beginning when Mr. Ruthenburg was president of the Copeland company and Mr. Terhune a distributor for the firm.

Army Refrigeration Problems

By P. B. Reed

Manager, Refrigeration and Air Conditioning Division, Perfex Corp.

Conditions Affecting Food Preservation

Cooling is only one requirement for the proper preservation of most perishable foods. Almost as important are humidity and air circulation. In fact these three factors are usually interdependent; a change in one of them will usually cause or require a change in one or both of the other two. Nevertheless, the removal of heat and the consequent reduction in temperature is, for the most part, our chief concern; it is what most of our equipment is primarily designed to do.

Regardless of what the humidity is or how the air circulates, most foods will quickly deteriorate unless they are cooled below ordinary room temperatures. The activity of the bacteria and molds that cause food to spoil, is retarded by low temperature. Humidity and air circulation affect the appearance, quality and saleability of the foods, but affect their preservation in only a secondary manner.

The Time Element—In addition to temperature, humidity and circulation, there is another very important factor that must be taken into consideration—time—how long the foods are to be stored. This is sometimes overlooked by the user of the refrigeration equipment; he is likely to consider that if the refrigeration equipment will keep a piece of meat properly for a few days that the meat should keep just about as well for weeks; and that the equipment is at fault if it does not keep the foods almost perfectly preserved for long periods.

STORAGE TIME IMPORTANT

The length of time that foods are to be kept well determine the temperature, air circulation rate, and humidity to be maintained, and consequently the type and design of the equipment to be used in their preservation. The following examples will serve to bring out these points.

Example: **Beef — Long Time and Short Time Storage**—Sides or quarters of beef may be kept in the packing house storage for several weeks or even several months, at a temperature of just above 32° F. at comparatively high humidities. For short time storage in a reach-in or walk-in cooler the beef will be held at about 36° or 40° F. with the relative humidity about 85%.

Under these conditions the beef should only be kept for a few days. After about a week the beef will start to deteriorate rather rapidly, both in actual condition and in appearance.

OPENING OF DOORS AFFECTS COLOR OF MEAT

In refrigerators that are worked out of, walk-in coolers as well as reach-in refrigerators, it is quite difficult to maintain close control of temperature and humidity, and fluctuation of humidity in particular has a considerable effect on the appearance of the meat, especially if the beef has been cut into roasts, steaks, or other cooking portions.

Example: **Cabbage and Celery Storage**—Cabbage and celery may be kept for three or four months at 32° at high relative humidities (90% to 95%) and with good air circulation and ventilation. For short time storage of a few days the temperature may be quite high, 45° to 50°, or even higher, if the humidity is kept high and the circulating of the air is good.

Variations in Requirements for Individual Foods—There is, of course a great deal of difference in the various foods themselves. Ripe tomatoes, for example cannot be well preserved for more than a few days, regardless of the temperatures, humidities, or air circulation employed, nor can they be successfully frozen or dehydrated and thus preserved for long periods. Canning remains about the only successful long-time method of preservation of tomatoes. Tomatoes are one of the few "bad-boys" of the refrigeration industry.

Quick-freezing, Peas and Corn—Peas and corn are similar to tomatoes in that they can be successfully stored for only a few days at temperatures above freezing and even then they rapidly lose food value and vitamin content within a few hours after being gathered, but unlike tomatoes, they can be quick-frozen very successfully and thus kept in fine condition for long periods of time and with the minimum loss of food value and vitamin content.

Many Foods in One Refrigerator—Most army or navy refrigerators or coolers, like those of the corner butcher or grocer, must accommodate fresh and smoked meats, butter, milk, fruits, vegetables, eggs, lard, and in fact about any perishable food that may be used. Any or all of these foods must be kept in one or two rooms or refrigerators and there is little opportunity to keep each food under the "optimum" conditions, that is, the correct temperature, humidity and air circulation for that particular food.

WHY IT CAN BE DONE

It is only possible to successfully keep all these foods in one or two general conditions, **because they are kept for a short time only.**

The table above shows the temperatures that have been agreed upon by the refrigeration industry generally for short time storage although admittedly they are actually compromises between optimum conditions and practical, operational considerations.

Limited Selection of Temperatures Within One Refrigerator—It will be possible to attain most of these temperatures in the ordinary walk-in or reach-in cooler supplemented perhaps by a wall box or counter type case. Temperatures do vary within the coolers themselves and the foods should be arranged as well as possible to take advantage of the colder or warmer locations in the refrigerator for the types of food that may benefit best from these cooler or warmer locations.

Recommended Short-Time Storage Temperatures

50° to 60° F.—Cut flowers, dates, sweet potatoes, mushrooms, chocolate.

45° to 50° F.—Oranges, grapefruit, peaches, pineapples, celery, spinach, rhubarb, tomatoes, corn, cucumbers, lettuce, cabbage, endive, egg-plant, beets, molasses, honey, yeast, bread, dough, beer, cut flowers.

40° to 45° F.—Raspberries, blackberries, cherries, figs, melons, cranberries, currants, apples, pears, plums, okra, green beans, asparagus, brussel sprouts, peas, carrots, radishes, cauliflower, broccoli, lard, milk, cream, butter, salad dressings, furs.

36° to 40° F.—Sauerkraut, potatoes, pork, sausage, bacon, ham, bologna, lamb, mutton, beef (fresh and corned), liver, chickens, veal, cheese, lobsters, serums.

32° to 36° F.—Oysters, fresh fish, poultry.

0° F.—Ice cream and frozen foods.

Air Force Conditions Its Instrument Repair Shops

ST. LOUIS — Would the sandy desert be a good place to repair a watch — or out in the steaming jungle? Well, that's where our Army Air Forces need accurate bombing instruments and all sorts of airplane equipment that can be as easily ruined by dust, rust and corrosion as a watch when repaired, adjusted or calibrated—which must be done constantly and with precision.

At the main air bases, this work is done in large air conditioned repair shops which require larger types of Carrier equipment, but the way Americans are pushing the fight, something more portable is needed.

The Air Corps' answer is highly portable repair shops big enough for three men to work in but small enough to go in a cargo plane, cargo glider, or to fit in the body of an Army truck. Within this portable shop is all of the equipment required to repair and calibrate delicate bombing instruments.

Of course, these portable repair rooms are air conditioned to keep rust, dust and corrosion from spoiling the vital equipment worked on in them—and so the mechanics can do their work accurately and quickly regardless of snow or rain, heat or cold.

Now in service in the fighting zones are portable repair rooms of this type made by the Herman Body Co. of St. Louis—all to date equipped with Carrier air conditioners. For this important use, Carrier made a special adaptation of its "room weathermaker."

The air conditioners provide enough outside air into the repair rooms to insure adequate ventilation. All of this air is double-filtered of dust. Excessive moisture is removed from the air by a one-tone refrigeration unit, which also cools the air to reduce perspiration on the hands of the workers. Perspiration is acid and will corrode parts handled, and too high humidity rusts steel parts.

For winter heating, a gasoline-fired heater of very simple design, made by Hunter & Co. of Cleveland, is built into the air conditioner.

Servicing the G-E Refrigerator Line

Complaints and Adjustments

Partial or No Refrigeration

Cause I: Restriction in refrigerant system interferes with operating cycle.

CORRECTION

1. Shut off machine.
2. Heat evaporator with electric heating element until it is as warm as hand can stand, which is around 130° F.

If no heater is available, fill ice trays with hot water and keep cabinet door open.

3. Place heater under lower right corner of evaporator on Scotch-yoke machines where injector tubes are located.

Heater should not be in direct contact with surface of evaporator.

4. Start machine after evaporator is warm.

Cause II: Discharge valve leak in Scotch-yoke machines, or check valve leak in CA and DR machines, allows refrigerant to be drawn back into evaporator. Loud hiss can be heard after machine stops.

Editor's Note: This is the sixth of a series of articles describing the servicing of General Electric Co.'s refrigerators, which is being published in Air Conditioning & Refrigeration News.

CORRECTION

Apply heat to evaporator as indicated under Cause I.

Cause III: CA and Open-type Machines. Non-condensable gas prevents liquid refrigerant from entering float valve. Float valve will feel cooler than top of condenser.

CORRECTION

Bleed non-condensable gas according to instructions.

Cause IV: CA and DR Machines. Oil conditioner is inoperative, which results in low frost line and noisy operation.

CORRECTION

Test oil conditioner and replace if necessary.

Cause V: Float valve is stuck, which keeps refrigerant from entering evaporator. Unusual compressor noise can be heard when machine runs. CA machines seldom have stuck floats; non-condensable gas is more likely to be the cause.

CORRECTION

1. Heat float valve with electric heater, if available, to drive out liquid refrigerant.
2. Tap float valve or lift it with a magnetic lifter.
3. Do not tap directly on shell of float valve.

a. Place a block of wood on float valve and tap on wood rather than directly on shell of float.

b. On DR machines, place bottle cap from a refrigerant bottle over purging screw socket of float valve and tap upon bottle cap.

c. Never hammer on top of a CA float valve.

Cause VI: Low refrigerant causes low frost line.

CORRECTION

1. Be certain that all other possible causes of low frost line have been investigated before considering low refrigerant.
2. Add refrigerant according to instructions.

Cause VII: Refrigerant overcharge. Suction line, from evaporator to compressor, frosts.

CORRECTION

Purge according to instructions.

Cause VIII: Open-type machines. Belt is loose or damaged.

CORRECTION

1. Adjust by loosening compressor or motor and moving apart.
2. Replace badly worn or damaged belt.
3. Line up motor and compressor pulleys with a straight edge.

Noise

Noise is often an indication of "Unsatisfactory Refrigeration." If examination of a machine indicates that it is not refrigerating properly, the complaint should be handled as an "Unsatisfactory Refrigeration" complaint.

Noise complaints are occasionally received when a machine runs and refrigerates properly. There is often a definite cause for the noise but it must be recognized that the noise level of different machines will vary due to differences in design, the refrigerant used, and other factors. At times, an unstable floor or enclosed area around refrigerator will amplify the normal operating noise level of a machine. When a machine is found to be operating properly, these points should be explained to the customer. It may not be possible to move a refrigerator to another location or to brace the floor, although such corrections might eliminate the noise.

Noises that can be caused by the refrigerator itself are described in the following information:

Cause I: Cabinet Vibration.

CORRECTION

1. Adjust shelves and dishes to eliminate vibration or rattling.
2. Level cabinet with shims or leveling devices.
3. Install rubber pads under legs of Monitor Top cabinets with CA and DR machines that shake when stopping.

Cause II: CE, CF, CH, CJ, and FBA Machines. Vibrating parts and machine mounting.

CORRECTION

1. Bend refrigerant tubing if vibrating against cabinet or condenser.
2. Bend housing, not fan blades, on machines having fan which is hitting housing.
3. Oil fan motor with S.A.E. 10 automobile oil and tighten motor mounting on machines with such equipment.
4. Tighten bolts and screws holding machine to cabinet.
5. Install front foot of compressor on top of base cross-piece rather than on bottom.
6. Mount machine on rubber if previous steps are unsuccessful.

Cause III: CA and DR Machines. Oil conditioner inoperative which results in refrigerant condensing in case, mixing with oil and being pumped to bearings.

CORRECTION

Test oil conditioner and replace it if it is inoperative.

Cause IV: CA and Open-type Machines. Non-condensable gas which increases pressure. In CA machines, refrigerant condenses in the case, mixes with oil and is pumped to bearings. Float valves on CA machines will feel cooler than top of condenser.

CORRECTION

Bleed non-condensable gas according to instructions.

Cause V: DR Machines. Low refrigerant charge in early machines having freezing solution in evaporator. This results in oil remaining in evaporator and low oil level in compressor case.

CORRECTION

1. Test for low oil level in compressor case. Lift control side (left) of cabinet top about six inches. If machine becomes noisier after several minutes of operating, oil is low.
2. Add refrigerant according to instructions. Except for machines with two evaporators which require two bottles, one bottle of 1¾ pounds of refrigerant usually is sufficient to permit return of oil to compressor case.

Cause VI: Refrigerant overcharge results in liquid refrigerant being pumped to bearings.

CORRECTION

1. Examine suction line; if frosted, machine is overcharged.
2. Purge according to instructions.

Cause VII: Open-type Machines. Motor compressor assembly.

CORRECTION

1. Tighten a slapping belt by loosening motor or compressor, and moving apart. Replace badly worn belt.
2. Line up motor and compressor pulleys with a straight edge.
3. Apply soap or neat's-foot oil to a squeaky belt.
4. Tighten or replace loose pulley and fan assembly.
5. Oil noisy motor or squeaky mounting spring.
6. Tighten mounting bolts, separate tubing and parts vibrating together, etc.

Removing Restriction Causing Partial Frost

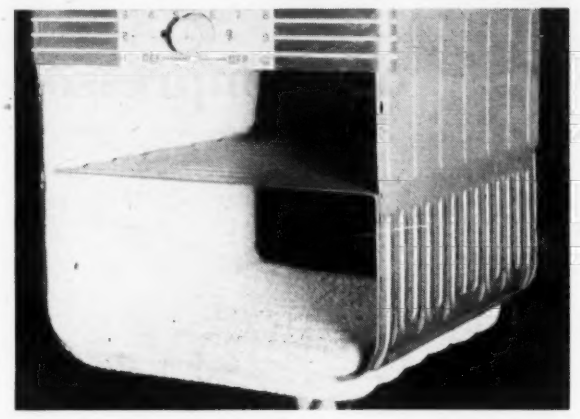


Fig. 25 (left)—Partial frost due to restriction.

Fig. 26 (above)—Heating evaporator.

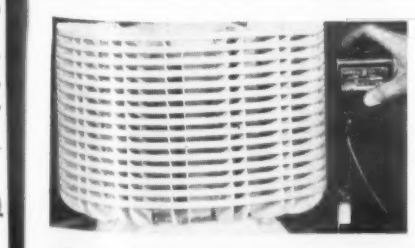


Fig. 27—Using float valve lifter.

Fig. 28—Tapping stuck float valve.

Tanks & Trucks Undergo Extreme Weather Tests In New Laboratory

Temperature Ranges From —70° to 150°

Battery of Compressors Needed to Cool Chambers

By Terry Mitchell, M. E.,
Frick Co.

Refrigerating engineers have successfully tackled some pretty difficult jobs in the 60-odd years since mechanical cooling was introduced. It is safe to say, however, that none of these presented more problems, or was more intricate and comprehensive, than the high-low-temperature weather laboratory recently built for the Corps of Engineers, U. S. Army.

This job comprises not just one testing room, but three. It not only provides temperatures as low as minus 70° F., but furnishes air heated all the way up to plus 150° The humidity of the air ranges from saturation to only 20%, which in ordinary language is bone-dry. For simulating conditions at high altitudes, as met by a plane flying in the stratosphere, the air pressure can be reduced 5 or 10 lb. below atmospheric.

The motion of the air is controlled by numerous fans, the largest of which handles 100,000 c.f.m. A separate conditioning system supplies pure make-up air, as required for engine tests. Gauges indicate the amounts of carbon monoxide and carbon dioxide present in the chambers.

More remarkable still, all of these conditions in the three chambers are maintained by automatic controls, arranged to be set in steps. This unique plant would have been regarded as an impossibility, a few years ago. That its engineers should have been called upon to design, manufacture, erect and test the equipment in this huge weather laboratory, handing it over to the Army on a turnkey basis, is an honor of which the Frick Co., of Waynesboro, Pa., is rightly proud.

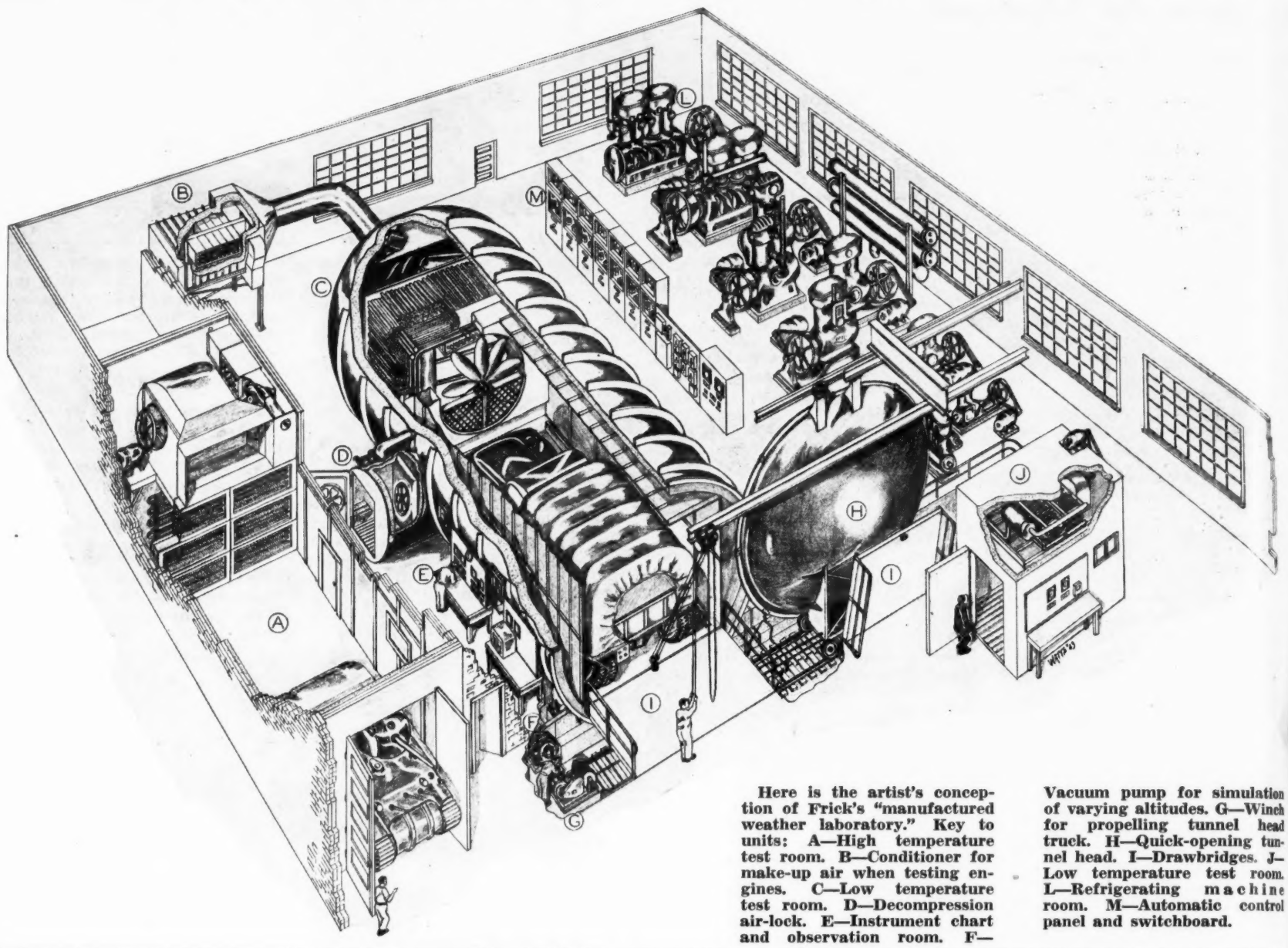
Practically every man and woman in the Frick works contributed something toward this installation, which is already being used for testing improvements in airplane engines, tanks, trucks, radios, instruments, etc., necessary for hastening the end of the war.

To adequately describe all the features of the three rooms in this plant would require many pages. Briefly stated, the laboratory is made up of a large high-temperature room, a still larger low-temperature tunnel with air-pressure control, and a small low-temperature test room.

The "hot" room has separate sets of coils for steam, water, and direct-expansion ammonia. The main blower, which is of the squirrel-cage type, circulates 60,000 cu. ft. of air through the room and over the steam and cold-water coils; water can be sprayed into the air to increase humidity. An auxiliary blower of 750 c.f.m. is connected to the ammonia coils, which are connected in turn to one of the low-temperature refrigerating systems, for dehumidification.

The main tunnel is an immense steel tube, 22 ft. in diameter and over 48 ft. long. The shell is of welded steel, ½-inch thick, braced

(Continued on Page 21, Column 2)



Here is the artist's conception of Frick's "manufactured weather laboratory." Key to units: A—High temperature test room. B—Conditioner for make-up air when testing engines. C—Low temperature test room. D—Decompression air-lock. E—Instrument chart and observation room. F—Vacuum pump for simulation of varying altitudes. G—Winch for propelling tunnel head truck. H—Quick-opening tunnel head. I—Drawbridges. J—Low temperature test room. L—Refrigerating machine room. M—Automatic control panel and switchboard.

Stratosphere Tunnel is a Giant

Fig. 1 — Looking into the giant "stratosphere" tunnel, 22 feet in diameter, 48 feet long, which can be cooled to –70° F. or heated to 150° F. It will withstand a vacuum equal to a 40,000 ft. altitude.

Torture Chamber' For Some Weapons of War

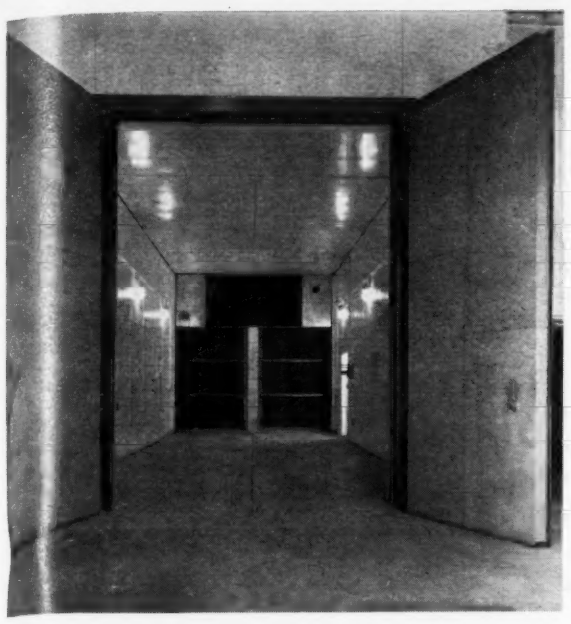


Fig. 2—The "hot" room is equipped with steam, water, and ammonia coils, and two air circulating fans, to control both temperature and humidity as desired.

Where Test Results are Watched in Comfort

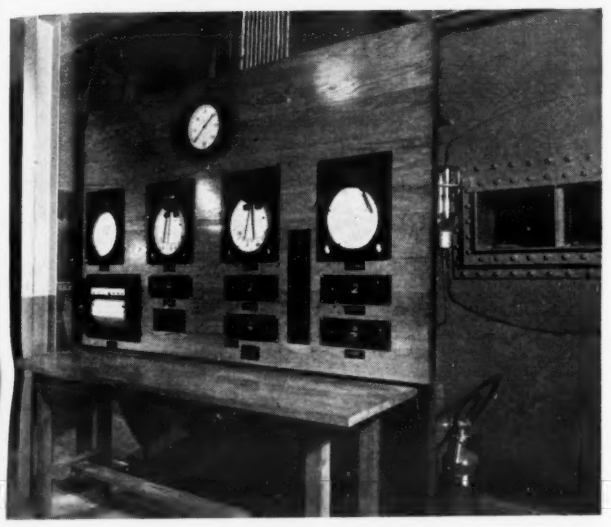


Fig. 4—One of the instrument panels in the laboratory. Windows at the right side look through wall of the tunnel, have four panes of glass.

Reproduces Arctic Blasts

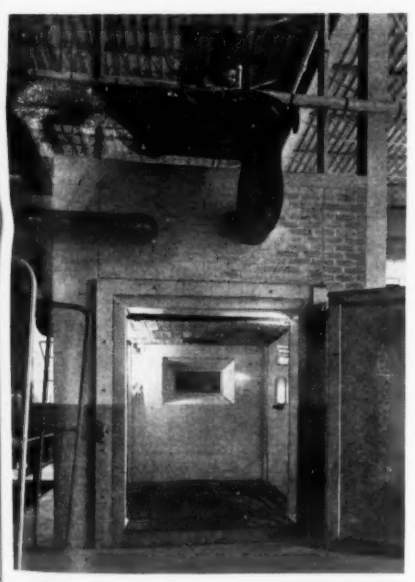


Fig. 3—The small low-temperature test room has its own separate refrigerating system and fan arrangement. Note window in the end for observation purposes. The room is provided with three stages of control.

Cooling is Big Part of 'Weather' Lab.

(Continued from Page 20, Column 3)

on the outside with 10 rings, which measure 1 inch by 10 inches. These rings have a flat extension at the bottom and serve as supports for the tunnel; expansion and contraction are taken up by rollers under the feet. Inside the tunnel there are heavy layers of insulation, covered with a cement finish. A steel floor, two vertical side walls and a ceiling of asbestos board enclose a square space in the center of the tunnel. The air from the big multi-blade propeller fan is driven through this space, and returns between the sides, floor and ceiling and the outer shell.

The air passes over banks of finned coils at the rear end of the tunnel. The shaft of the 100,000 cu. ft. fan shaft extends through the center of these coils to a motor on the outside of the tunnel. Above this motor is the inlet for the make-up air, which is conditioned in the equipment at "B."

An air lock at "D" serves as a "decompression" chamber when the tunnel is operated under a partial vacuum. To make the dished head tight against the end of the tunnel under such conditions, a circular one-piece tube of rubber is inserted between the flanges of the joint. The head slides away from the tunnel on a special railway truck, operated by the winch at "G." After the head has been "opened," one of the draw bridges "I" is lowered to permit easy access to the tunnel.

Windows, with the multiple layers of glass kept dry with Silica Gel, are placed in the side of the tunnel near the instrument table at "E." A powerful suction blower removes air from the tunnel when desired. The conditions within the tunnel can be maintained in any of 12 steps. The automatic control devices are partly in the pipe lines and partly in the switchboard at "M." They operate through a combination of electricity and compressed air.

The small cold room has three stages of control. This room, of course, has its own coils, 500-c.f.m. fan, and controls. It is insulated with 10 inches of rock cork, covered with Asbestosite. The small cold room has its own 3-stage refrigerating system, which includes a 7¾-inch by 5-inch machine and a 4-inch by 4-inch, both running at 600 r.p.m. with low suction pressures, and a 3-inch by 3-inch at 500 r.p.m. for the third stage.

There are 10 ammonia compressors in all. The two largest machines each have four cylinders of size 15-inch diameter by 10-inch stroke. These discharge into a pair of 11½ by 8's, each with two cylinders, while two 7-inch by 7-inch machines handle the high-pressure work. A 4-inch by 4-inch compressor is used for pump-out service. V-belt drives are used throughout, and all machines have Flexo-seals on the shafts.

The Equipment For the Laboratory is 'Heavy'

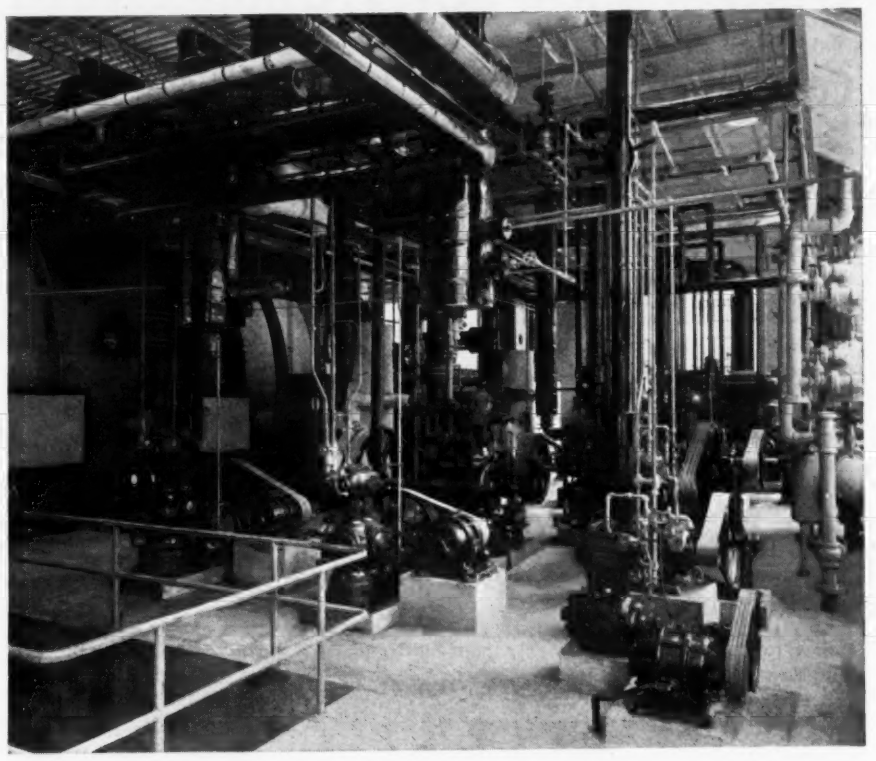


Fig. 5—Ten Frick ammonia refrigerating machines handling the cooling work. At far left is shell of the tunnel.

A person inspecting the plant will be surprised to see that two small type MS ammonia condensers, each 16-inch diameter by 12 feet long, carry the whole load.

The auxiliaries are a study in themselves. The main 12-inch ammonia suction line runs through a large low-pressure receiver, equipped with a liquid return pump. There are two intercoolers, two purgers, two gas-and-liquid coolers, two float controls, 100 thermometer wells, starters, relays, and special valves by the dozens, 24 motors, thousands of feet of finned coils, traps, supports, nozzles, etc. The system is charged with 5,000 pounds of ammonia.

Denver Plan For Training Refrigeration Repairmen Is One of Most Complete

Completely Equipped Classroom Part of Setup As Local Council Gets Into Action

DENVER, Colo. — The Denver Emergency Refrigeration Service Council, working in collaboration with the Denver public school system and all elements of the refrigeration industry, has taken steps to establish a course that will train repairmen quickly and thoroughly.

The schooling plan, part of the National Refrigeration Manpower and Training Program, will train 50 or 60 men simultaneously. Initial proposal calls for employers to pay these trainees and send them to school for a half day and work them in their shop the other half day. If this does not work out satisfactorily, a different plan may be substituted whereby the trainee can go to school for a complete day and work with his employer the following day.

The services of six instructors, all of whom have had at least five years of experience in refrigeration work, have been obtained.

"It is our opinion that this training will turn out a high percentage of good men who will be capable of performing between an 80 and 90% job on service this summer," states T. M. Foulk of the Public Service Co. of Colorado, Permanent Coordinator for the program. "This may sound like an extravagant claim, but in our own shop service program started last September we have been astonished at the results obtained when using organized job instruction methods."

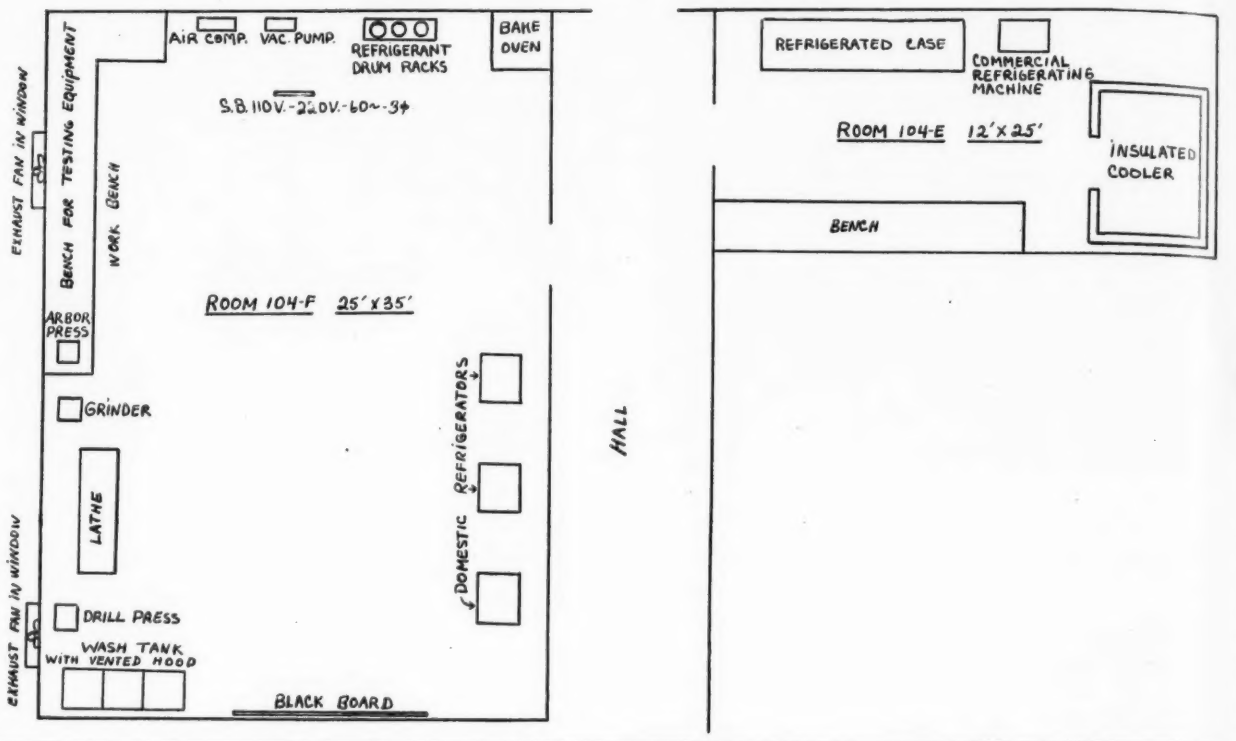
The Recruitment and Training Committee has devised an employment application form for trainees, which has the merit of including all pertinent information on a single sheet. A reproduction of the form is illustrated.

Dr. Roy A. Hinderman is the vocational director of the Denver Public Schools and will have charge of the refrigeration training program. The Denver Public Schools have been given authorization to proceed with the purchase of the necessary tools and equipment, and to remodel such facilities as are necessary to provide space in which such schools can be conducted.

Space that is being assigned for the refrigeration schools is in one of the Opportunity School buildings. A layout for the school equipment prepared by members from industry has been approved and will probably be followed (see drawing).

Another step towards the development of a successful training program was a listing of equipment with which the training school is to be equipped. Following are the lists of equipment which are to be furnished (1) by industry; and (2) by the school system.

Industry Men Design a Classroom For Refrigeration Training



EQUIPMENT TO BE FURNISHED BY INDUSTRY

1 Hermetic domestic refrigerator.
1 Semi-hermetic domestic refrigerator.
1 Open type domestic refrigerator.
1 Flooded type domestic evaporator.
1 Direct expansion type domestic evaporator.
1 Capillary tube type domestic evaporator.
1 ½-hp. air cooled commercial condensing unit.
1 ¾-hp. water cooled commercial condensing unit.
1 1½-hp. water cooled commercial condensing unit.
1 2-hp. air cooled commercial condensing unit.
1 Flooded type commercial evaporator.
1 Direct expansion type commercial evaporator.
1 Blower type commercial evaporator.
2 Each, methyl chloride, sulphur dioxide and Freon thermostatic expansion valves.
2 Automatic expansion valves.
3 Pressure controls.
3 Temperature controls.
1 Glass evaporator (demonstration unit).
3 Cutaway valves.
1 Finned case coil.
1 Finned walk-in coil.
1 Finned wall box coil.
1 Ice cream cabinet.

EQUIPMENT TO BE PURCHASED BY THE SCHOOL

10 ⅜" bending springs, inside.
10 ½" bending springs, inside.
3 Prestolite acetylene regulators, 10 lbs.
2 Soldering and brazing kit (similar Imperial No. 38).
2 Torch tips. No. 3 (similar Imperial No. K-3).
10 Fitting and tubing cleaning brushes, ¼", ½", ⅜".
3 Sets swedging tools, ¼", ½", ⅜".
2 Charging and purging sets for hermetic units and high side floats (similar Imperial No. 182-F).
10 Crescent wrenches, thin type, 12".
10 Crescent wrenches, thin type, 10".
10 Crescent wrenches, thin type, 8".
2 Pipe wrenches, 14".
2 Pipe wrenches, 10".
2 Pipe wrenches, 8".
10 Sets chisels, ⅜" to ⅞" (similar Blu Point C5K).
10 Allen wrenches (junior kits).
10 Diagonal wire cutter pliers, 6".
10 Diagonal wire cutter pliers, 8".
10 Compound gauges, 30" to 60 lbs., or equal.
10 Pressure gauges, 0 to 300 lbs.
10 6" steel scales.
10 Inside and outside calipers, 6".
5 Refrigerant cylinders, 5 lb. size.
5 Refrigerant cylinders, 10 lb. size.
10 Pair double strength full protection goggles.
6 Dial thermometers, 6", 20 to 90 degrees.
12 Pocket thermometers, minus 20 to 120 degrees.
10 Pump type oil cans.
10 Tool sets (Duro No. 4557RS, or equal).
3 Screw extractor sets (No. 10 rigid or equal).

SHOP EQUIPMENT

1 Air compressor.
1 Vacuum pump.
4 Benches, 10' x 36".
1 Refrigerant drum rack.
2 Gas masks.
4 Bench vises, 4".
2 Bench vises, 6".

(Concluded on Page 23, Column 2)

Denver Trainees Apply on This Form

APPLICATION FOR PAID TRAINING AND EMPLOYMENT IN THE REFRIGERATION, AIR CONDITIONING, FROZEN FOODS INDUSTRIES

Name: ..... Selective Service Classification: .....
Address: ..... Telephone: ..... Soc. Security No.: .....
Date of Birth: ..... Place of Birth: ..... Are You a U. S. Citizen: .....
Health: ..... Height: ..... Weight: .....
Do You Have Hernia: ..... Heart Trouble: ..... Other Chronic Illness or Physical Disability:
.....
Have You Ever Received Accident or Disability Compensation: ..... If So, Explain: .....
.....

LIST DEPENDENTS:

Name	Relationship	Age	Occupation
.....			
.....			
.....			

PREVIOUS EMPLOYMENT RECORDS PAST 10 YEARS OR MORE

From	To	Employer	Your Occupation	Wage	Reason For Leaving
.....					
.....					
.....					

EDUCATION AND TRAINING RECORD

School	Period Attended	Course or Subjects	Did You Graduate
.....			
.....			
.....			

When Can You Start Training: ..... Can You Furnish Statement of Availability: .....
If selected for paid training is it your present intention and desire to continue to work for the employer who pays for your training: ..... For how long: .....
Is there anything in your record, character, or reputation that would prevent your employer from obtaining at his expense a fidelity bond covering your actions as an employee: .....

To the Best of My Knowledge the Above Statements Are True and Accurate.

.....
Applicant's Signature

Denver Program For Training Backed by All Industry Factors

(Concluded from Page 22, Column 5)

1 Double shaft grinder and scratch wheel.
1 Surfacing plate.
1 Arbor press, 1½ ton, 7" radius.
1 Floor type, ¾" chuck, and 1 set drills, 1/32" to ¾" x 1/64" for drill press on location. Wash benches (solvent) (carbon tetrachloride).
1 Each low dolly, and low dolly (125 lb. casters). (2 to be constructed).
1 Portable volt meter, 0-250 V. Ampere meter, 0-10 A.
1 Watt meter, 0-2500 V, 0-50 A. 0-5000 V.
2 Recording thermometers, 20 to 70 degrees.
1 Lathe, 14" by 6'.
1 Low temperature well for setting thermo switches. Black boards or sketch easel.
2 Force draft vent hoods.
1 Bake oven.
1 Cooler insulated.

The organization of the Local Emergency Council and the Training Program in Denver has demonstrated what can be accomplished by a banding together of all the various elements of the industry involved. Says Mr. Foulk:

"Harold R. McCombs, of McCombs Refrigeration Supply Co. (parts jobber), practically abandoned his business for several weeks to devote his energies toward the furtherance of the Denver program. In the early stages of this movement the Rocky Mountain Electrical League and George Lewis, manager, volunteered the services of its offices for the use of the newly formed Council, and wrote many of the letters and made mailings to the membership."

And of course Mr. Foulk's own company, Public Service Co. of Colorado, has had one of the most important roles in the development of the entire program.

The Local Emergency Refrigeration Service Council of Denver has elected the following officers: President, John A. Smethills, Refrigeration Service Co.; vice president, L. L. Perry, Frigidaire division of General Motors; vice president, Ernest L. Martin, Martin's Refrigeration Sales & Service; secretary-treasurer, Harold R. McCombs, McCombs' Refrigeration Supply Co.

Recruitment and Training Committee includes: John Turner, Creamery Package Mfg. Co. (chairman); T. C. Alexander, Alexander's Refrigeration Service Co.; Ralph Tolin, Refrigeration Service Co.; C. G. Henderson, Public Service Co. of Colorado.

Membership and Supplies Committee members include: George Thompson, Nash-Kelvinator Corp.; (chairman) R. C. Kimmel, McCombs Refrigeration Supply Co.; Warner Burbank, Public Service Co. of Colorado.

Selective Service Committee embraces the following members: Robert H. Joyce, Public Service Co. of Colorado (chaiman); J. M. Richey, Richey's Refrigeration Service; H. C. Fisher, York Mountain States, Inc.

Price and Wage Committee: C. R. Smith, Snodgrass & Smith Co. (chairman); John Hamilton, Herb Names, Inc.; James Eakins, Public Service Co. of Colorado.

High Pressure Welding Tips Introduced

DETROIT—A new line of Frostpoint refrigerated resistance welding electrodes with replaceable Frostcaps of Mallory-3 metal has recently been introduced by Frostrode Products.

Designed for welding operations requiring high electrode pressures, the new caps of high strength and hardness provide increased durability, in severe, high production service. Construction of the electrode is similar to other types of Frostpoints designed for normal electrode pressures in which hard drawn copper is used for maximum electrical and thermal conductivity. The finned internal surfaces of the Mallory-3 Frostcap distribute the coolant uniformly assuring accurate control of cooling and resulting in reduced "pick up," more spots before cleaning and long electrode life, it is claimed.

New Felt Insulation Can Be Slipped on Pipe or Refrigerant Tubing

DETROIT — "Slip-On" insulation for pipes and tubing of all sizes is now being made available by Frank D. Saylor & Son of Detroit.

This pipe and tubing insulation is made with a covering of hair felt of any desired thickness, between an outer covering and an inner raceway.

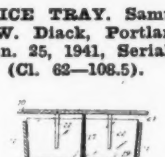
The covering can be made in long or short lengths. It is flexible and is slipped on to the pipe very easily, according to the producer.

PATENTS

Weeks of Feb. 8 & 15

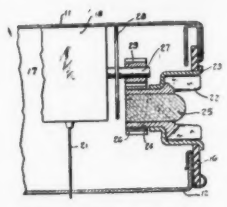
(Continued from Mar. 13 Issue)

2,341,700. ICE TRAY. Samuel L. Diack and Arch W. Diack, Portland, Ore. Application Jan. 25, 1941, Serial No. 375,970. 13 Claims. (Cl. 62—108.5).



11. In combination with an ice tray, a flexible diaphragm dividing the interior of the tray into an upper freezing compartment and a lower sealed compartment, a fluid in said sealed compartment in position to react against said flexible diaphragm, a grid overlying said flexible diaphragm and cooperating with said tray to form a plurality of ice compartments, the fluid in said compartment being of such character and present in such an amount as to cause, upon a rise in temperature thereof, the application of a force upon said diaphragm sufficient to break the bond between said tray and the ice formed therewithin.

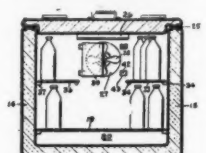
2,341,924. REFRIGERATION APPARATUS. Ralph E. Kruck, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Nov. 28, 1942, Serial No. 467,171. 1 Claim. (Cl. 62—1).



In a refrigerator including a cabinet structure defining a food compartment having an access opening, door for closing said compartment, and a breaker strip surrounding said opening and against which said door closes, a bearing countersunk in said strip, a temperature-control member rotatable in, and extending inwardly through said bearing, said control member having a through centrally-disposed bore therein, a magnifying lens in said bore, an indicating mechanism including a disc and relatively small indicate the setting of said control member, and means interconnecting said control member and said disc for rotating said disc upon rotation of said control member, said disc being offset with respect to said control member and being concealed by said strip, with only one of said indicia visible through said lens at any one time.

2,341,962. REFRIGERATION APPARATUS. Elo C. Tanner, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Aug. 14, 1941, Serial No. 406,755. 7 Claims. (Cl. 62—102).

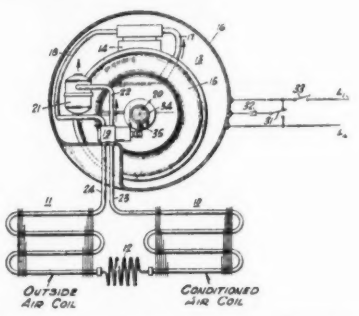
1. In a cooler for packaged beverages, the combination of a heat insulated, rectangular chamber having bottom, side, and end walls, and a top wall comprising



a door; two shelves in said chamber secured adjacent opposite side walls of the chamber and spaced above the bottom wall thereof and from each other; and means for cooling and circulating the air in said chamber, said means including a fan positioned near an end wall of said chamber and above the space between said two shelves, said fan blowing the air substantially horizontally and parallel to said side walls into said chamber.

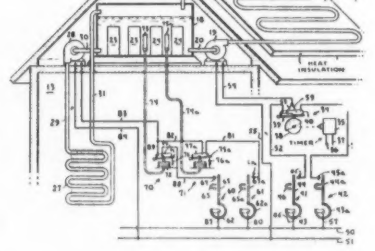
Weeks of Feb. 22 & 29

2,342,174. AIR CONDITIONING APPARATUS. Edward R. Wolfert, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application June 28, 1941, Serial No. 400,162. 6 Claims. (Cl. 62—6).



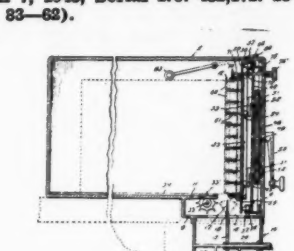
1. In a reversible cycle refrigerating system for heating or cooling an enclosure, the combination of a compressor, a motor driving the compressor, a fluid-tight casing enclosing the motor and the compressor, first and second heat exchangers, said second heat exchanger being arranged to heat or cool air for the enclosure, means connected between said heat exchangers for reducing the pressure of the refrigerant from condensing pressure to evaporating pressure, reversing valve means disposed within said fluid-tight casing and adapted to selectively connect the suction and the discharge of said compressor to said first and second heat exchanger, respectively, for heating said enclosure or to said second and said first heat exchanger, respectively, for cooling said enclosure, and means operable from the exterior of said casing for controlling said reversing valve means.

2,342,211. UTILIZATION OF NATURAL HEATING AND COOLING EFFECTS. Alwin B. Newton, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application Oct. 17, 1941, Serial No. 415,433 8 Claims. (Cl. 257—3).



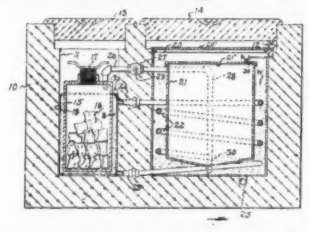
1. In apparatus of the character described, in combination, means forming a fluid containing heat exchanger arranged so as to cause the temperature of the fluid flowing through the exchanger to be changed by natural outdoor conditions, a storer of temperature changing effects, means for transferring heat between said storer and said heat exchanger by circulating the fluid medium therebetween whereby temperature changing effect is stored in said storer, means for utilizing the temperature changing effect stored in said storer to control the temperature of an objective, and control apparatus indicative of a prospective need for heating or cooling of said objective controlling said heat transfer means, said control apparatus including selective means responsive to temperature for operating said heat transfer means at one predetermined temperature during the night and at another predetermined temperature during the daytime.

2,342,213. ICE MACHINE. Dezell Ostrander, Coco Solo, C. Z. Application April 7, 1943, Serial No. 482,172. 18 Claims. (Cl. 83—62).



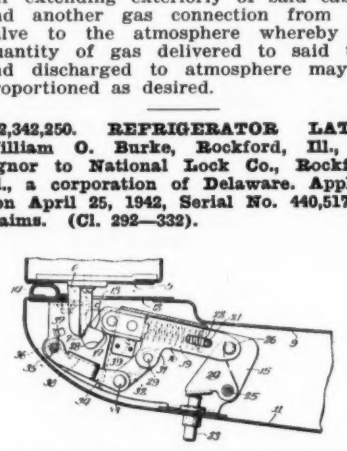
1. In an ice machine, a cabinet open at one end to receive a block of ice, a hinged door for opening and closing the cabinet, a cutting mechanism carried by the door and operable from the exterior of the cabinet for cutting the ice into fine and coarse particles, a collection unit removably mounted on the cabinet and in communication with the interior thereof and including separate compartments separable from said unit to receive fine and coarse particles of ice, and means for directing the fine cut ice into one compartment and the coarse cut ice into the other compartment.

2,342,221. BEVERAGE REFRIGERATOR AND DISPENSER. Clara E. Quinn, St. Petersburg, Fla. Application Oct. 20, 1942, Serial No. 462,723. 2 Claims. (Cl. 62—91.5).



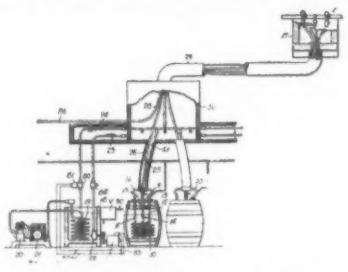
1. In a device of the type described the combination including a heat insulating cabinet forming two compartments opening upwardly, removable covers for said compartments, a tank immersed in water in one of said cabinets, a cooling coil surrounding said tank and immersed in the water, a double wall metallic container mounted in the other of said compartments, and connected to said coil, the space between the double wall being filled with a liquid refrigerant, and the space within the double wall container being adapted to have solid carbon dioxide sealed therein, a connection from the solid carbon dioxide space to a port at the bottom of said tank, a valve in said connection having an operating member extending exteriorly of said cabinet and another gas connection from said valve to the atmosphere whereby the quantity of gas delivered to said tank and discharged to atmosphere may be proportioned as desired.

2,342,250. REFRIGERATOR LATCH. William O. Burke, Rockford, Ill., assignor to National Lock Co., Rockford, Ill., a corporation of Delaware. Application April 25, 1942, Serial No. 440,517. 5 Claims. (Cl. 292—332).



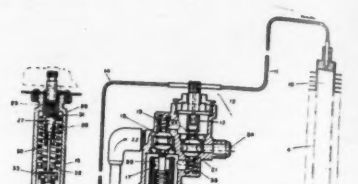
1. In a refrigerator latch, the combination of a bolt adapted to engage a stationary keeper for holding a door in closed position, a spring for projecting said bolt, manually operable means for retracting said bolt against the action of said spring, and an over-center toggle mechanism pivotally connected at one end with the bolt for holding said bolt in retracted position, said mechanism being positioned in alignment with the keeper to be actuated by the extremity of said keeper upon closing movement of the door to thereby release said bolt.

2,342,299. BREW COOLING AND DISPENSING INSTALLATION. Gerald D. Peet, Montclair, N. J., assignor to Novadel-Agene Corp., Newark, N. J., a corporation of Delaware. Application July 26, 1940, Serial No. 347,645. 9 Claims. (Cl. 225—40).



1. A brew cooling and dispensing installation, comprising a keg, a faucet remote from said keg, a brew line extending from said keg to said faucet, a circulating system for cooling fluid and including a pair of liquid tight jacket lengths, one encircling the portion of said brew line adjacent the keg and the other encircling the major length of brew line therebeyond to said faucet, means feeding cooling fluid in parallel into the adjacent ends of the respective jacket lengths, passageways within the respective jacket lengths and extending the lengths thereof for return flow of the cooling liquid from the respective opposite ends thereof, said keg having a hollow part in heat exchange relation with the keg contents and affording communication between the corresponding jacket length and the return passageway thereof, and means adjacent the faucet affording communication between the corresponding jacket length, and the return passageway thereof.

2,342,328. VALVE ARRANGEMENT. Willis H. Carrier, Syracuse, N. Y., assignor to Carrier Corp., Syracuse, N. Y., a corporation of Delaware. Application Dec. 27, 1941, Serial No. 424,577. 11 Claims. (Cl. 236—1).



11. In a valve arrangement of the character described a first double seated valve, a second double seated valve, a housing for said valves, means for admitting conditioning fluid into the housing thereby changing its temperature, a thermal sensitive element operative re-

(Concluded on Page 25, Column 1)

CLASSIFIED ADVERTISING

RATES for "Positions Wanted," 5¢ per word; minimum charge, $2.50. Three consecutive insertions, 12½¢ per word; minimum charge, $6.25.

RATES for all other classifications, 10¢ per word, minimum charge, $5.00 per insertion. Three consecutive insertions, 25¢ per word, minimum charge, $12.50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other addresses by actual word count.

BUSINESS OPPORTUNITIES

MICHIGAN'S LARGEST commercial refrigeration and store fixture sales and service company desires contacts for distribution in Michigan. HARROD REFRIGERATION SALES & SERVICE, 201-05 North Jackson St., Jackson, Mich.

POSITIONS AVAILABLE

ENGINEER. Southwest. Real opportunity for permanent connection with live wire well established distributor of air conditioning and commercial refrigeration. Box 1536, Air Conditioning & Refrigeration News.

BEST OPPORTUNITY in all America both during and after the war. San Diego, Calif. offers you everything worth living for. We need good service men. Will pay top wages, time and a half and double time for over 44 hours plus liberal commissions. WRIGHT REFRIGERATION SERVICE, 1337 India St., San Diego 1, Calif.

REFRIGERATION ENGINEER: Substantial midwestern manufacturing firm planning entry into refrigeration field has attractive opening for young graduate engineer in equipment development department. Considerable laboratory work now and excellent post-war opportunities to grow with the refrigeration department. Limited practical experience helpful. Box 1528, Air Conditioning & Refrigeration News.

EXCELLENT OPPORTUNITY in charge of sales department of well established and recognized wholesale parts and accessories refrigeration wholesaler. A large volume business already established covering four Eastern States. Must be thoroughly familiar with refrigeration business. State qualifications in full. Box 1531, Air Conditioning & Refrigeration News.

MECHANICAL ENGINEER experienced in the design of refrigerating compressors and auxiliary equipment by a large Mid-West manufacturer. Reply confidential. Position permanent. Box 1529, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

TEN NEW model 21 Copeland compressors. No priority required. MOTOR TRUCK REFRIGERATION CO., 8642 Gratiot Ave., Detroit 13, Mich., Phone Plaza 0612.

FOR SALE: 4, 6, 8 hole converted Frigidaire Expansion cabinets with remote ⅓ hp. A.C. 60 cycle units. Send for list and prices. EDISON COOLING CORP. 310 E. 149 St., New York 51, N. Y.

ICE REFRIGERATED bottle coolers. Three-case capacity. Modern streamlined design. All steel, heavily insulated, equipped with casters, bottle opener and receptacle. Can also be used for cooling other products. $19.00 net each, f.o.b. Philadelphia. Brand New. No priority required. Write today! GENERAL REFRIGERATOR CO., 855 North Broad Street, Philadelphia, Pa.

SACRIFICING: Quantity Fedders heavy duty flooded type cooling units from 4 to 16 tray sizes, brand new. Prices on request. Box 1533, Air Conditioning & Refrigeration News.

FOR SALE, 400 Frigidaire Model "K" $35; 500 Kelvinator Model 400, $42.50. All units are removed from ice cream cabinets, with SO_2 gas, in running condition, with ½-hp. 60 cycle, 110-220 V, and low pressure switch. EDISON COOLING CORP. 310 E. 149th St., New York 51, N. Y.

POSITIONS WANTED

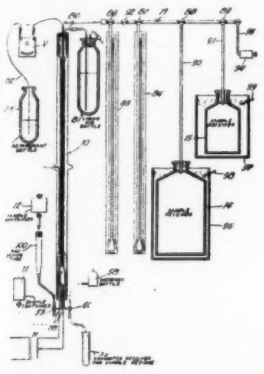
MANUFACTURERS REPRESENTATIVE available. Prefer Southwest territory. Want several lines now or postwar for jobber distribution. Can furnish AA-1 references. 15 years engineering and sales experience. Excellent field contacts and top notch sales record. Box 1537, Air Conditioning & Refrigeration News.

Patents (Cont.)

(Concluded from Page 24, Column 5)

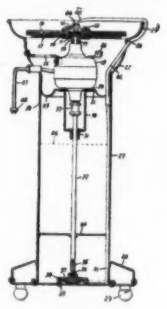
sponsive to changes in temperature of the housing for causing the first valve to assume one position when heated fluid is admitted to the housing and a different position when cooled fluid is admitted to the housing, a thermal sensitive element outside the housing for reflecting changes in atmospheric conditions of an area to be air conditioned, and means controlled by said element for causing the second valve to assume one position under winter operating conditions when heated fluid is desired to be discharged from the housing and a different position under summer operating conditions when cooled fluid is desired to be discharged from the housing.

2,342,386. LOW-TEMPERATURE APPARATUS FOR ANALYZING FLUIDS. Walter J. Podbielniak, Chicago, Ill., assignor to Benjamin B. Schneider. Application Nov. 8, 1939, Serial No. 303,434. 7 Claims. (Cl. 202—185).



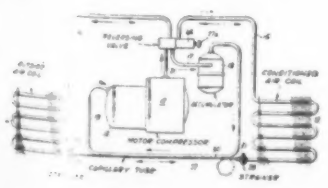
1. Apparatus for precise analytical fractionation comprising an elongated distilling tube, a distilling bulb at the lower portion of the tube, said bulb having an inlet conduit for the introduction of a sample to be distilled to said bulb and means for sealing the sample in the bulb, an evacuated jacket surrounding the tube with the inner wall thereof spaced from the tube substantially throughout the length thereof to provide a relatively wide space between the tube and jacket at the upper portion of the tube and a lower relatively narrow cooling space between the jacket and the rest of the tube, a reflux cooling vessel in said relatively wide space having heat conducting walls positioned about said tube and spaced therefrom to provide a relatively narrow passage between the tube and vessel communicating with said lower narrow space, said reflux cooling vessel opening into said passage between it and the tube, and means for supplying a vaporizable refrigerant fluid in said reflux cooling vessel whereby the vapors of said fluid enter said passage and flow down along the tube through said relatively narrow cooling space to cool the tube and means for venting said vapors from the space adjacent the bottom of the tube to the atmosphere.

2,342,469. ROOM AIR CONDITIONING UNIT. Osmund Holm-Hansen, Fairfield, Conn., assignor to General Electric Co., a corporation of New York. Application Dec. 13, 1941, Serial No. 423,500. 4 Claims. (Cl. 261—34).



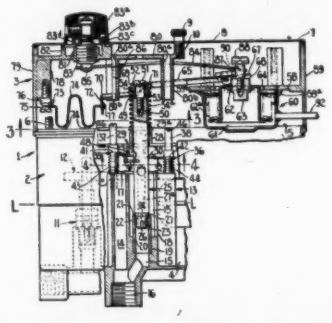
1. An air conditioner having in combination an upwardly open housing having an annular upwardly sloping concave rim flaring outwardly at the top thereof to provide a circular water flow riffle below the top of said rim, a spinner disc formed of porous hygroscopic material for producing a centrifugal flow of air therethrough to filter said air flow, means for spinning said disc with the periphery thereof overlying said riffle to project said centrifugal air flow against said rim and thereby bend said centrifugal air flow upwardly, and means for supplying a flow of water centrally to said disc to wash and humidify said air flow through said disc and over said rim and counterflow excess water over said riffle into said housing.

2,342,566. AIR CONDITIONING APPARATUS. Edward R. Wolfert, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Jan. 17, 1944, Serial No. 518,513. 9 Claims. (Cl. 62—129).



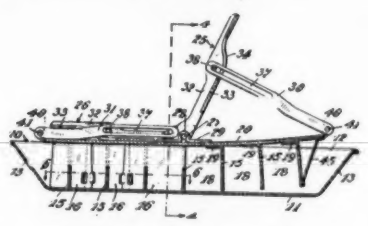
1. In a reversible cycle refrigerating system for heating or cooling air for an enclosure, the combination of a compressor, first and second heat exchangers, the second heat exchanger being arranged to heat or cool air for the enclosure, a capillary tube connected between said heat exchangers and serving to expand refrigerant from condensing pressure to evaporating pressure during both the heating and the cooling cycle, a suction conduit connected to the suction of said compressor, and means including a reversing valve for selectively connecting said suction conduit and the discharge of said compressor to said first and said second heat exchanger, respectively, during the heating cycle, or to said second and said first heat exchanger, respectively, during the cooling cycle, said suction conduit and said capillary tube being arranged in heat transfer relation to transfer heat from the expanding refrigerant in the capillary tube to the expended refrigerant in the suction conduit during both the heating cycle and cooling cycle.

2,342,633. CONTROL MEANS. Walter S. Landon, Detroit, Mich., assignor to Detroit Lubricator Co., Detroit, Mich., a corporation of Michigan. Application March 5, 1941, Serial No. 381,835. 16 Claims. (Cl. 236—48).



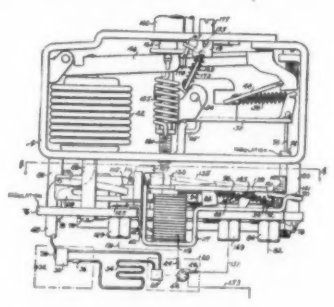
1. In a device of the character described, a pressure sensitive power element, a movable controlling member, motion transmitting means movable by said element, force exerting means acting on said transmitting means and operable to cause said transmitting means to move with a quick action, a thrust member engaged and movable with said transmitting means and having limited lost-motion relative to said controlling member, said thrust member having its limit of lost-motion in one direction established by its engagement with said controlling member, said thrust member acting at said limit to connect positively said controlling member to said transmitting member so that said controlling member moves with said transmitting member, said thrust member during said one direction lost-motion permitting said transmitting means to be in motion prior to movement of said controlling member, the extent of said one direction lost-motion movement being such that the operating pressure of said power element necessary for complete movement of said controlling member will be reached before said thrust member connects said controlling member to said transmitting means.

2,342,654. UNITARY GRID ASSEMBLY FOR ICE FREEZING TRAYS. Nils Arland af Kleen, Stockholm, Sweden, assignor to Kleen Refrigerator, Inc., Hoboken, N. J., a corporation of Delaware. Application Feb. 2, 1942, Serial No. 429,246. 9 Claims. (Cl. 62—108.5).



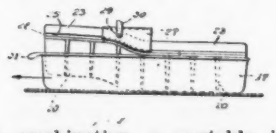
1. In a unitary grid assembly for ice trays, longitudinally extending resilient means, a plurality of spaced-apart vertical partitions arranged transversely of said resilient means and rigidly secured at their upper ends to said resilient means to form transverse walls, a plurality of separate vertical partitions extending transversely to said first-named partitions and movably connected together in overlapping relation to form a continuous longitudinal dividing wall, each of said second-named partitions being supported intermediate its ends by a separate one of said first-named partitions, and motion transmitting means carried by said resilient means for flexing said resilient means in the form of an arc having its axis above the grid assembly, whereby said first-named partitions are moved outwardly relative to one another and said second-named partitions are moved longitudinally relative to one another to release the ice blocks in the cells formed by said transverse walls and said longitudinal dividing wall.

2,342,658. INDUCTION MOTOR CONTROL. Albert O. Grooms, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Nov. 30, 1940, Serial No. 367,990. 6 Claims. (Cl. 172—279).



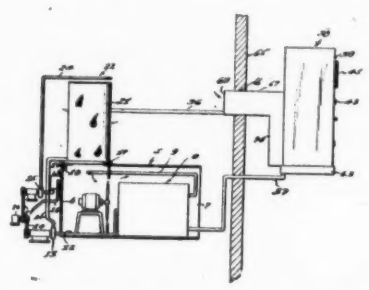
1. In combination, an electric motor having phase and main windings, a current responsive starting control for controlling the energization of the phase winding, overload control contacts including a single movable contact and a fixed contact for controlling the energization of at least the running winding, overload control means for operating to open and closed positions said movable contact, and pressure-operated means for operating said movable contact, a first snap-acting means for controlling the operation of said movable contact, and a second-snap-acting means for controlling the operation of the pressure-operated means.

2,342,670. REFRIGERATION. Harley Y. Jennings, Fred W. Schouman, and William F. Swezey, Flint, Mich., assignors to Copeman Laboratories Co., Flint, Mich., a corporation of Michigan. Application April 29, 1940, Serial No. 332,250. 15 Claims. (Cl. 62—108.5).



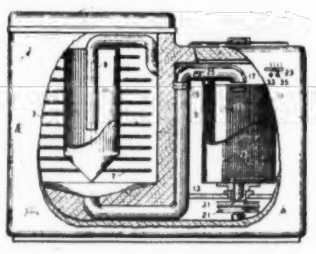
1. In combination, a portable ice try, a removable grid unit disposed in said ice tray having a distortable longitudinal connecting member thereon, and means for engaging said member progressively along its length in the removal of said grid unit from said ice tray and its frozen contents, said grid unit being removed from said tray and its frozen contents by relative horizontal movement between said means and said tray.

2,342,689. SYSTEM FOR COOLING AND HUMIDIFYING AIR. Neal A. Pennington, Tucson, Ariz., assignor of one-half to Robert H. Henley, Tucson, Ariz. Application Oct. 4, 1940, Serial No. 359,813. 11 Claims. (Cl. 62—129).



1. A method of cooling and humidifying warm abnormally dry outside air and introducing the resultant into a selected space, said method comprising cooling an aqueous solution of hygroscopic substance, said solution being of such concentration that, when it is at a temperature approximately the wet bulb temperature of the air to be treated, it will have a vapor pressure lying well between the vapor pressure of the air to be treated and the vapor pressure of pure water at that temperature, and maintaining the temperature of the solution near the wet bulb temperature of said outside air, then passing a stream of said warm abnormally dry outside air in countercurrent contact with a stream of the cooled solution so as to simultaneously cool and humidify the air, and directing the resultant air into the said space.

2,342,706. FREEZING FOODSTUFF. James O. Tankersley, near Knoxville, Tenn., assignor to Tennessee Valley Authority, a corporation of the United States of America. Application Feb. 3, 1943, Serial No. 474,510. 4 Claims. (Cl. 62—173). (Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757).



1. A method of freezing foodstuff which comprises:

(a) Supplying to a rotatable foraminous walled container with foodstuff therein a continuous stream of refrigerant liquid maintained at a temperature below the freezing point of said foodstuff,

(b) removing said refrigerant liquid through the walls of said container at a rate of at least equal to the rate of supply of said liquid thereto,

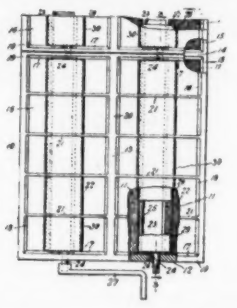
(c) maintaining said refrigerant liquid supply until the foodstuff is frozen,

(d) terminating the supply of said refrigerant liquid, and

(e) rotating said container at a speed effective to remove from said foodstuff substantially all of said refrigerant liquid.

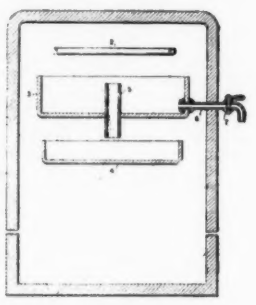
2,342,743. REFRIGERATING APPARATUS. Herschel Lutes, Detroit, and Jonathan J. Buzzell, Alpena, Mich. Application March 6, 1942, Serial No. 433,684. 7 Claims. (Cl. 62—108.5).

6. A freezing tray unit comprising a substantially rigid main tray, a flexible tray seated within the main tray, said main and flexible trays being formed of a non-metallic material to the surfaces of which a substance, contained within the flexible tray, will not adhere when frozen, an eccentric member mounted for operative movements within a slotted opening extending lengthwise of the bottom wall of the main tray, and a follower positioned within the main tray to normally close said opening and to distribute the lifting force of said member uniformly over a portion of the bottom wall of the flexible tray for the ejectment



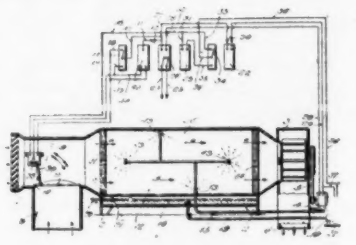
of a frozen content of the flexible tray therefrom.

2,342,759. DEFROSTING AND FROST PREVENTION. Milton S. Schechter and Herbert L. J. Haller, Washington, D. C. Original application Aug. 31, 1940, Serial No. 354,949. Divided and this application July 17, 1943, Serial No. 495,204. 4 Claims. (Cl. 62—1). (Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757).



1. In combination with a refrigeration system having an evaporator unit, a vessel beneath said unit in a region normally warmer than the evaporator to catch drippings therefrom, said vessel containing a volatile water-miscible liquid and a compound capable of salting out the volatile liquid from aqueous solutions thereof.

2,342,841. AIR CONDITIONING OR COOLING SYSTEM. Thomas W. Carraway, Dallas, Texas. Application March 31, 1941, Serial No. 386,140. 10 Claims. (Cl. 236—44).



2. In an air conditioning system, an enclosure to which cooled air is to be delivered; a conditioning chamber having an inlet and having an outlet arranged to discharge cooled air to said enclosure; a blower for moving air through said chamber and to said enclosure; means for supplying liquid within said chamber to effect evaporative cooling of air passing therethrough; a thermostat responsive to temperature in said enclosure for controlling operation of said blower and said liquid-supplying means; manually operable means for controlling operation of said blower and said liquid-supplying means independently of said thermostat; and a humidostat responsive to the humidity in said enclosure for controlling said liquid-supplying means conjointly with the means controlling the blower.

Deferment Procedure Remains Unchanged

(Concluded from Page 1, Column 5)

pair. Facts and figures regarding population, number of shops, number of servicemen, and volume of service business during 1941-1943 and during 1944, are all desirable information to include in the application.

Cooperation between all refrigerator repair shops in a community to collect as much of this mutual information as could be of use to all of them would prove valuable in making these applications for deferment.

A strong case for the repairman can also be presented to the local board through a group letter. If members of the Local Emergency Refrigeration Council, or even an informal group of service shop operators, including competitors of the firm whose repairman faces possible induction, cooperate to explain to the local board the essentiality of refrigeration and the need for this particular repairman's being kept on the job, the local draft board will undoubtedly consider the case more carefully, it is thought.

Such a group letter, primarily calling the attention of the local board to 115-B, should clearly present the facts of the local refrigeration situation.

The letter prepared by the War-Time Refrigeration Council of the Twin Cities (Minneapolis-St. Paul), which was published in full in the Feb. 14 issue of the NEWS, may serve as a guide for any group letter.

After these letters have been sent to the local board, both the repairman and his employer should find out if the local board intends to follow 115-B.

If the local board indicates that it will not follow 115-B, the repairman should immediately send in a written request by registered mail asking for a personal appearance before the board to present his case. **This request must be received by the local board within 10 days of the date of classification as 1-A.**

When it is learned that the local board will not follow 115-B, the employer should telephone or wire the state director of Selective Service to inform him of the local board's refusal to follow 115-B.

Selective Service officials recently reminded employers that any occupational deferment given on the basis of 42-A is a temporary measure intended to give the employer time to find a replacement. It is the employer's responsibility, officials point out, to obtain that replacement.

After deferment is obtained for an employe, the employer should apply to the U. S. Employment Service for eligible replacements, stressing the urgent need of refrigerator repair services and the great increase in demand for such service in hot weather, advises WPB.

WPB Advises Refrigeration Repairmen To Start Making Provision Now For 'Rush Season' Supplies

(Concluded from Page 1, Column 3)

again since the desired parts or materials may now be available.

MOTORS

The suggestion applicable to parts applies also to electric motors. Some new motors, although they are very scarce, are appearing on the market. In addition, some motors are available on an exchange basis through repair service stations established by motor manufacturers.

If the refrigeration service shop operator will take a few "bad-order" motors to a manufacturer's service station, he may be able to obtain a few rebuilt motors in exchange. This, in itself, will be a tremendous help in meeting emergency service demands during the peak summer period. If the service shop uses this method before the emergency period begins, it may be able to repeat it and thereby maintain an emergency stock on hand.

Transportation during the peak service season presents a problem that requires preparations in advance to meet gasoline and tire needs.

The operations of trucks and of passenger cars converted to truck use are subject to regulations of the Office of Defense Transportation and are governed by Certificates of War Necessity issued by ODT. Mileage and fuel allotments for such vehicles are determined by ODT through its district offices over the country, and the local War Price and Rationing Boards of the Office of Price Administration issue gasoline rations to the operators on the basis of ODT certifications.

If an operator finds that he will require a larger mileage and fuel allotment for the peak service season, provision is made for an appeal through ODT channels for an increase.

Private passenger automobiles used as service cars but not converted to truck use, are subject to OPA regulations. Operators of these vehicles obtain authorizations for gasoline rations from the local OPA War Price and Rationing Boards.

Applications for certificates to acquire tires, whether for trucks or for passenger cars, are handled by War Price and Rationing Boards.

Applications for second- and third-quarter gasoline allotments should be supported with complete information about the operation of the repair shop, and the tremendous increase in demand for refrigerator repair service which comes with the arrival of summer should be explained carefully, WPB said.

Cliff White Named To Airtemp Sales Staff

CINCINNATI—Cliff S. White has been named district representative for Airtemp Division, Chrysler Corp., and will be assigned to this territory following training at Dayton headquarters of the company, announces Edmund A. Orrell, northern sales supervisor.

Armstrong's 1943 Sales Highest In History

LANCASTER, Pa.—Domestic sales of the Armstrong Cork Co. in 1943 jumped to $111,646,983, the highest in the company's 84-year history, reports H. W. Prentis, Jr., president. Tripled volume of the company's Munitions Division over 1942 was the chief reason for the record-breaking sales volume, explained Mr. Prentis.

Net earnings after taxes also rose sharply from $2,964,384 for 1942 to $3,667,026 for 1943. This was equivalent to $2.45 per share of common stock, compared with $1.95 in 1942. In a letter to stockholders the company declared that it did not expect to be required to make any refunds to the government this year as a result of negotiation.

Although operations of the company's foreign subsidiaries were handicapped by the war, their combined sales in 1943 totaled $4,261,846 as against $4,314,293 in 1942.

In connection with Armstrong's postwar planning, Mr. Prentis revealed to stockholders that the company has set aside a reserve of $750,000 to meet costs of reconversion.

Air Conditioning & REFRIGERATION NEWS

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